

**DRAFT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT
FOR SEAGRASS RESTORATION IN THE
FLORIDA KEYS NATIONAL MARINE SANCTUARY**

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CHAPTER 1. PURPOSE AND NEED FOR ACTION

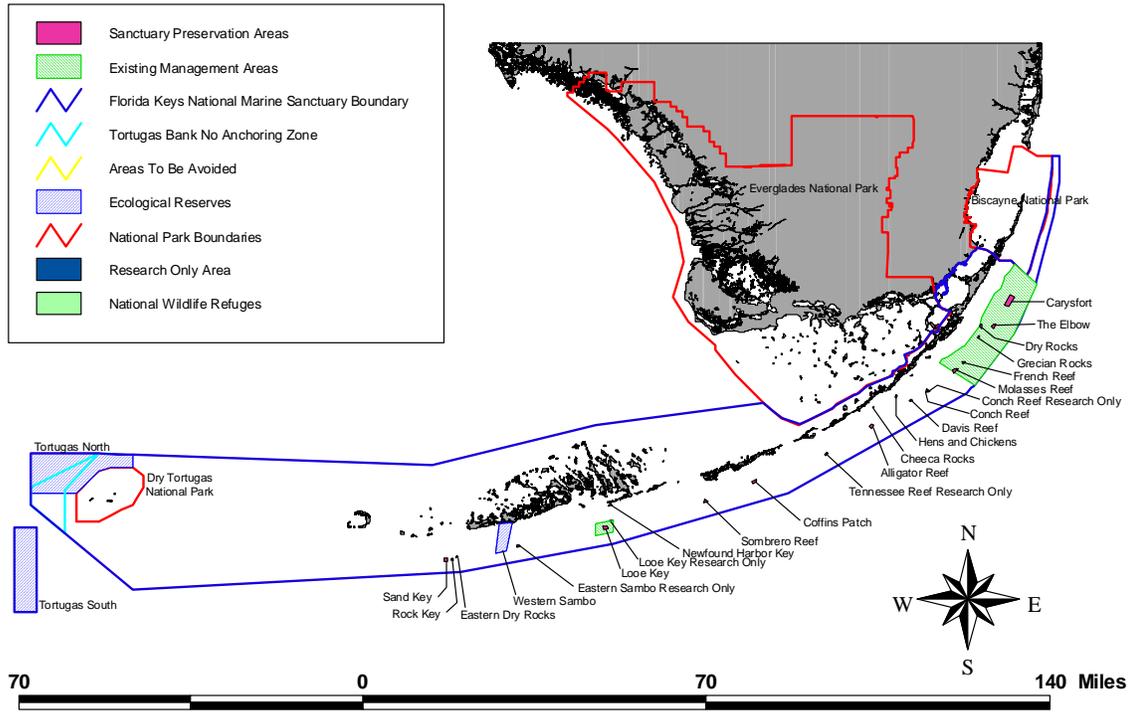
1.1 PURPOSE

This Programmatic Environmental Impact Statement (PEIS) systematically evaluates the short and long-term environmental and socioeconomic effects related to the implementation of seagrass restoration and seagrass injury prevention projects in the Florida Keys National Marine Sanctuary (FKNMS). The Trustees for the FKNMS are the National Oceanic and Atmospheric Administration (NOAA) and the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, (“State of Florida” or “state”). This document is intended to comply with the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations, and the NOAA guidelines for compliance with NEPA. As this document focuses on future regional seagrass restoration and injury prevention activities within all of the FKNMS, the discussion of potential positive and negative impacts on the biological, social, and economic environments will not be site or case specific; instead, they will be general in scope. Therefore, the goal of this PEIS is to describe a range of seagrass restoration techniques, used for both primary and compensatory restoration projects, and seagrass injury prevention actions that potentially may be implemented in the FKNMS. The types of seagrass restoration and injury prevention projects proposed in this plan will be implemented with funds collected through natural resource damage assessment (NRDA) settlements for injuries to seagrasses within the FKNMS. The anticipated beneficial and adverse environmental and socioeconomic impacts of each restoration technique will be discussed in detail later in this document.

1.2 NEED FOR PROPOSED ACTION

The FKNMS contains some of the most extensive seagrass beds in the continental United States. Seagrass beds are an important component of the Florida coral reef tract, the third largest barrier reef system in the world. In 1990 Congress recognized the significance of this area when it designated the area as a National Marine Sanctuary, by means of the Florida Keys National Marine Sanctuary and Protection Act (FKNMSPA) (see Figure 1-1). The FKNMSPA was later incorporated into subsequent reauthorizations of the National Marine Sanctuaries Act (NMSA). Implementing seagrass restoration projects in the FKNMS will prevent the injuries from expanding in size or increasing in severity; create the site conditions necessary for the injured areas to recover to pre-incident conditions; and compensate the public and the environment for the services lost from the time of injury until full recovery.

Figure 1-1. Map of the Florida Keys National Marine Sanctuary



Source: <http://www.fknms.nos.noaa.gov>

1.3 INTRODUCTION

Healthy seagrass communities serve an important ecological and socioeconomic function in the Florida Keys (FKNMS 1996). The predominant species of seagrasses are *Thalassia testudinum*, *Syringodium filiforme*, and *Halodule wrightii*. From an ecological perspective, seagrass beds are the nurseries for numerous species of fish and invertebrates. In turn, the viability of the recreational and commercial fishing industries, and the associated service industries, are to some degree, directly or indirectly dependent on healthy seagrass communities. From a physical perspective, seagrass beds are also effective storm surge buffers for the low-lying Keys, thereby reducing property damage during extreme weather events. Seagrasses function as natural filters that reduce the level of sediment in the water (i.e. turbidity). The natural filtration of water by seagrasses is a major contributor to the clearness of the water, a characteristic appreciated by those who live on or visit the Keys. This process also protects other members of the living marine resources community, such as the coral reef, which is vulnerable to eutrophating substances in turbid water.

Seagrass beds can persist under a wide range of hydrodynamic conditions. The horizontal rhizome and root system is underground, protecting much of seagrass biomass from the elements. The root system grows laterally, sending up short shoots that penetrate the surface. *S. filiforme* and *H. wrightii* have shallow, root-rhizome systems and can

initiate growth in oxidized, relatively unstable sediments, making them the principle seagrass colonizers in an area. Because *T. testudinum* (see Figure 1-2) builds a thicker root-rhizome system deeper underground, it takes this climax species longer to colonize an area, if water depth and wave energy provide the conditions necessary for its growth (Chiappone 1996).

Figure 1-2: Close-up of *Thalassia testudinum* rhizome



The cumulative impact of vessel groundings has led to a pervasive scarring of seagrass beds throughout the FKNMS (Sargent et. al 1995). In 2001 it was estimated that approximately 677 boat groundings occurred in the FKNMS, with approximately 60-70% of these occurring on seagrass beds.¹ Seagrass injuries in the FKNMS typically include a combination of propeller scars, blowholes, and sediment berms. Propeller scars are formed by the dredging effect of the turning propeller(s) as the boat travels over a shallow bank. The width of a propeller scar varies depending on many factors, including the size of the vessel and the extent to which the propeller is forced into the seagrass bed. Blowholes, another common injury feature, are formed from the concentrated force of propeller wash, either from the grounded vessel attempting to power off the bank or the propeller wash of the salvage vessel pulling the grounded vessel off the bank. The depth and area of the blowholes vary depending on many factors, including size of the vessel, extent of power used to remove the vessel, and type of substrate sediment. Berms, a third common seagrass injury feature, are produced from the sand, coral fragments, and other substrates that typically accumulate around the perimeter of blowholes, thereby burying healthy seagrass.

Restoration is an important step in reducing the cumulative impact of seagrass injuries throughout the Keys. When the underground seagrass rhizome system is damaged and the surrounding sediment altered by structural injuries such as vessel groundings, the seagrass community often has a difficult time reestablishing itself without supplemental restoration efforts.

¹ Lt. Bob Currul, Florida Fish and Wildlife Conservation Commission. Personal communication. January, 2002.

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The goal of a NRDA is to assess the nature, extent and severity of the injury, implement primary and compensatory restoration to make the environment and public whole, and recover response and damage assessment costs. The Trustees' main seagrass restoration objective for groundings is to conduct feasible, cost-effective, in-kind restoration using the best available techniques to accelerate recovery to the pre-grounding baseline levels. "Primary restoration" refers to restoration activities at the actual grounding site. For seagrasses, "baseline" refers to the level of ecological services that would have been provided but for the incident. These services are directly tied to the type, quality and density of the seagrass beds. Baseline conditions are typically measured via field assessment techniques in the undisturbed seagrass populations bordering the grounding site (Fonseca et al. 2000). In many circumstances, without primary restoration, the injured seagrass communities are subject to re-disturbance by storms that could slow recovery and/or expand the size of the injury (Whitfield et. al *in press*). "Compensatory restoration" refers to a restoration project(s), typically off-site, that would compensate the public for the lost interim ecological services as a result of the time it takes for the original, "primary" injury to return to baseline conditions. In some instances, compensatory restoration may take the form of preventative projects that seek to reduce the frequency and/or severity of similar grounding incidents. Typically, damages recovered for small compensatory restoration projects would be pooled together for the implementation of a larger compensatory restoration project.

These restoration and injury prevention objectives are in keeping with the goals and policies of the NMSA, the Florida Keys National Marine Sanctuary and Protection Act, the Florida Keys National Marine Sanctuary Management Plan and the sovereign submerged land policies of the State of Florida. The NMSA, 16 U.S.C. §1443(d)(2) (A), (B), and (C), defines the appropriate uses of recovered damages in order of priority as "(A) to restore, replace, or acquire the equivalent of the sanctuary resources that were the subject of the action; (B) to restore degraded sanctuary resources of the national marine sanctuary that was the subject of action, giving priority to sanctuary resources and habitats that are comparable to the sanctuary resources that were the subject of the action; and (C) to restore degraded sanctuary resources of other national marine sanctuaries." Appendix A contains the relevant sections of the NMSA related to this action. Amounts recovered for injuries to sanctuary resources lying within the jurisdiction of the State of Florida are used in accordance with the Agreement for the Coordination of Civil Claims between NOAA and the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. Appendix A contains the Civil Claims Agreement.

The restoration activities discussed above will not have a disproportionate or adverse human health or environmental effect on minority and low-income populations in the nearby vicinity or elsewhere, thereby complying with Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." The low-income and minority populations affected by these injuries and restoration activities are primarily those that live in nearby Monroe county (Key West Chamber of Commerce 1999). The restoration activities discussed in this document serve to return the seagrass banks to their baseline conditions with the effect of providing essential habitat for fish and other marine life on which many members of surrounding minority and low-income communities depend for their livelihood. Restoration will also facilitate natural filtration of the water, which protects nearby coral reefs that many minority and low-income persons working in tourism depend. Additionally, restoration will help protect surrounding areas, where many minority and low-income members live, from storm damage.

The identification and analysis of disproportionately high environmental and/or human health effects on minority and/or low-income populations was considered from the initial screening phase of the NEPA process to the consideration and communication of all alternatives and associated mitigation techniques. Appendix A contains relevant sections of Executive Order 12898.

CHAPTER 2. SEAGRASS RESTORATION ALTERNATIVES

2.1 SEAGRASS RESTORATION SELECTION ALTERNATIVES

Research on various aspects of seagrass ecology and restoration at NOAA’s Center for Coastal Fisheries and Habitat Research has been continuous for 20 years (Whitfield et. al, in press; Fonseca 1998). Areas of investigation include development and dissemination of planting techniques, monitoring protocols, success criteria, as well as studies to determine the light requirements of seagrasses, ecological equivalency of restored beds compared to natural beds, undisturbed systems, and studies regarding the dynamics of seagrass bed pattern and distribution. Emphasis has been placed on transfer of research information to managers, active participation in research projects, and litigation support. The research approach has been to sustain a broad-based program covering a variety of ecological processes that allows the scientists to quickly adapt and respond to changing management concerns and issues.

Based on the Trustees' broad experience with seagrass ecology and restoration, general criteria will be considered for selecting the appropriate restoration alternatives for site-specific seagrass injuries. The following criteria (see Table 2-1) are used to evaluate and select the preferred restoration alternatives. These criteria satisfy the restoration objectives while taking into account technical, environmental, economic and social factors of the FKNMS and surrounding areas.

Table 2-1. Criteria for Evaluating Seagrass Restoration Options

Criteria	Definition
Technical Feasibility	Likelihood that a given restoration action will work at the site and the technology and management skills exist to implement the restoration action.
Recovery Time	Measures that accelerate or sustain the long-term natural processes important to recovery of the affected resources and/or services injured or lost in the incident.
Additional Injury	Likelihood that the requirements, materials, or implementation of a restoration action minimizes the potential for additional injury.
Aesthetic Acceptability	Restoration alternatives that create substrates and topography that most closely resemble the surrounding habitat and minimize visual degradation.
Site Specific Context	Restoration alternatives are selected depending on the site specific context of environmental conditions at the site including but not limited to location, extent and severity of the injury, hydrological characteristics of the site, seagrass species composition, and other social and resource management concerns.

2.2 SEAGRASS RESTORATION OPTIONS

The following is a list of the most common alternatives for seagrass restoration that are considered prior to the selection of the preferred seagrass restoration alternatives for each site. As NOAA refines its restoration capabilities, addendums to this PEIS may be drafted. However, as most seagrass injury categories are fairly uniform, the techniques listed below are expected to be applicable to the vast majority of seagrass injury restoration projects. Depending on the scenario, a combination of these alternatives may be most effective. Other restoration alternatives that are not mentioned, such as mechanical plugging and planting of large sods, have not yet been demonstrated to be successful in the carbonate system of the FKNMS.

2.2.1 No-Action

A no-action alternative may be selected for seagrass injuries that have a high probability of rapid natural recovery or that are logistically or technically incapable of receiving any restoration actions, such as those

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that occur in very high-energy environments. A no-action alternative relies on natural colonization of seagrass species and the natural processes of sediment filling blowholes and propeller scars, which often occurs slowly over many years, to conditions that may or may not resemble pre-grounding topography. In contrast, restoration fills in blowholes and propeller scars quickly, and accelerates colonization of seagrass in the injured area. The no-action alternative can have two general outcomes: 1) natural recovery on a longer time scale relative to active restoration alternatives, or 2) further deterioration of the seagrass bed due to the absence of natural recovery. The no-action alternative is most often used for grounding cases in which the Trustees believe there is a low likelihood of secondary injury or injury expansion before natural recovery occurs, or where other social, environmental, or logistical considerations dictate that no-action is the best course (such as in the case of an injury to a *H. wrightii* bed which often recovers quickly on its own). Even if no-action is the selected alternative, compensatory restoration of another injured seagrass area may occur to compensate for the interim service losses. The amount of compensatory restoration necessary to compensate for the ecological services lost due to the injury will be determined through a habitat equivalency analysis (HEA) (NOAA 1995c). HEA is a well-established restoration scaling method that has been used in the past by natural resource Trustees to scale a wide range of compensatory restoration projects, including those designed to address injuries to seagrass habitats.

2.2.2 Seagrass Transplants

Planting seagrass in injured areas is known to be an effective way of stabilizing the sediments and decreasing the injury recovery time (Fonseca et al. 1998). Planting faster growing opportunistic species like *H. wrightii* or *S. filiforme* serves as a temporary substitute for the climax species, *T. testudinum*. This temporary substitution is referred to as “modified compressed succession” (Durako and Moffler 1984; Lewis 1987). Depending on the environmental conditions at the restoration site, the selection of seagrass transplants as a preferred restoration alternative will vary. For example, transplants may be selected most frequently at low to moderate energy sites where the probability of transplant loss due to high water velocity is lowest.

Potential sources for seagrass transplants include selective removal from healthy seagrass beds located near the injury or from seagrass beds designated previously by the Trustees as semi-permanent donor sites. All efforts will be made to use seagrass transplant stock from areas located close to, or in the vicinity of, the injury to ensure minimal variation in the genetic differences between the resident seagrasses and the transplanted seagrasses. Seagrass transplants will be collected in accordance with all necessary permits and in a manner that ensures that healthy seagrass beds are not degraded. Collection methods have been developed which minimize impact to donor beds of *H. wrightii* and *S. filiforme* and assure rapid recovery after plants have been removed (Fonseca et al. 1998). No negative impacts to vessel navigation or the ecological health of neighboring seagrass communities are anticipated from seagrass transplant collection and insertion, and there is no evidence that any invasive or exotic species have occupied donor sites. See section 2.2.5 for a description of seagrass transplant spacing.

2.2.3 Bird Stakes

In most areas of the FKNMS, seagrasses are nutrient limited.² As such, when vessel injuries disturb the sediment nutrient reservoir, the ability of seagrasses to re-colonize is more difficult. A method of fertilization that utilizes the nutrient composition of bird feces deposited from birds roosting on stakes (hereinafter referred to as “bird stakes” or “stakes”, see Figure 2-1) has been documented to be an effective treatment to facilitate colonization of seagrasses into disturbed sediments and/or faster growth of seagrass

² Although many areas of the Keys suffer from high levels of nitrogen loading from leaking septic tanks and other non-point sources, the relatively diffuse spread of these nutrients are not as effective in fostering seagrass recovery as a concentrated release of nitrogen and phosphorous fertilizer from bird stakes (Fourqurean et al. 1995).

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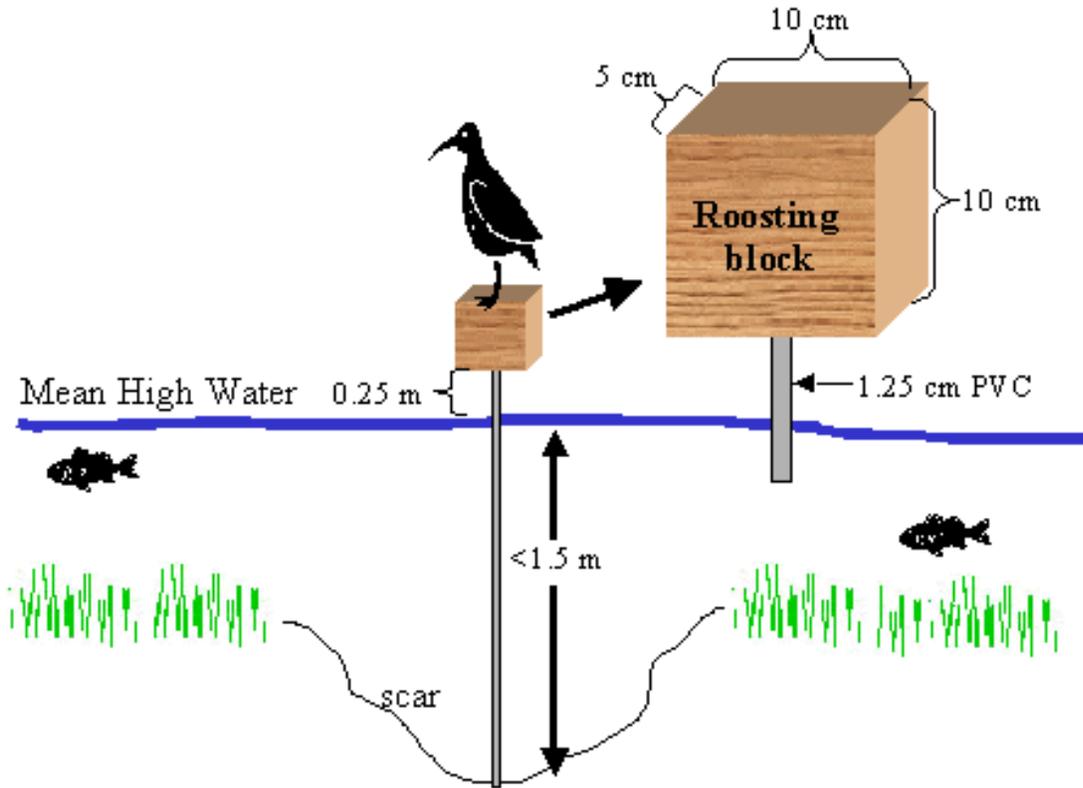
transplants (Fourqurean et al. 1992a; Fourqurean et al. 1992b; Fourqurean et al. 1995; Kenworthy et al. 2000). Bird stakes are preferable to fertilizer spikes in water depths of up to 1.5 meters, as they do not need to be continually replaced.

To be effective, bird staking requires that bird feces reach the seafloor in concentrated doses for as long as the stakes are in place. Water depths of 1.5 meters or less at mean high tide are generally considered ideal for bird staking. With water depths greater than 1.5 meters, the effect of dilution on the feces is believed to reduce the effective strength of the fertilizer. Depending on how water depth changes over the injury area, the length of each stake may vary slightly in order to maintain approximately 0.25m elevation above the high water level. Research has demonstrated that, if left on site too long, bird stakes may cause a communal shift of seagrass species from *T. testudinum* to *H. wrightii* (Powell et al. 1989). Thus, bird stakes are removed after approximately 75% survival coalescence is reached, which is usually after 18 months. A detailed review of bird stake construction and placement requirements are available in published guidelines (Fonseca et al. 1998; Kenworthy et al. 2000).

In most instances, bird stakes will accompany seagrass transplants. This decision is based on factors including the exposure of the site to wave action, density of fast-growing species in the undisturbed side populations, and scar substrate composition. Depending on the site-specific context of a case, portions of a scar may receive only stakes, while a different portion receives stakes and seagrass transplants. However, at injury locations with a high density of fast-growing species (e.g. *H. wrightii*), the insertion of bird stakes alone may be sufficient to encourage colonization.

The possibility for bird stakes interfering with vessel navigation is low, as bird stakes will be positioned in shallow water areas that should be avoided by vessels. In areas of high vessel traffic, additional steps may be taken to minimize the possibility of confusing stakes for public or privately placed navigational aids. This may involve the placement of additional bird stakes at either end of the prop scar to create a stake barrier. Other methods may include the use of educational signs and reflective tape on the stakes to reduce the possibility that boaters will confuse the stakes for a new channel passage. Bird stakes will be removed promptly from the site as soon as recovery is determined to be well underway or at the end of the allocated monitoring period time as detailed in the restoration plan. See section 2.2.5 for a description of bird stake spacing.

Figure 2-1. Bird Stake



2.2.4 Fertilizer Spikes

Bird stakes are the preferred technique for ensuring regular release of fertilizer over an area of approximately 3 square meters below the stake. However, in situations where bird stakes are inappropriate, such as in water depths over 1.5 meters, the use of chemical fertilizer spikes is another alternative to enhance seagrass colonization of the injury area. A broad review article published by Worm et al. (2000) documents that the benefits of in-situ nutrient enrichment through fertilizer spikes have been demonstrated in numerous studies to be an effective method for seagrass restoration. These in-situ nutrient enrichment studies have shown that fertilizer spikes deliver a high load of phosphorus, the main limiting nutrient for seagrasses growing on carbonate sediments in the FKNMS (Worm et al. 2000). Fertilizer spikes will naturally biodegrade in approximately three to four months, at which time, depending on the status of the restoration project, additional fertilizer spikes may be inserted. The placement of fertilizer spikes will follow guidelines for seagrass transplants detailed in Section 2.2.4.1, with no more than one spike placed directly adjacent to each transplant unit. The advantages of fertilizer spikes are: 1) they deliver a concentrated dose of nutrients in a small area that directly benefits individual planting units; 2) they are easier to deploy than encapsulated fertilizers, a significant advantage in coarse, firm sediments; 3) they are suitable for water depths greater than 1.5 meters; and 4) they are a viable fertilizer enhancement alternative when bird stakes are inappropriate due to hazards to navigation or risk of vandalism.

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The number of seagrass transplants and stakes/spikes required for propeller scars is determined according to the following general guidelines. These guidelines are subject to modification based on site-specific injury characteristics and the professional judgment of Trustee restoration experts. The longer axis of a propscar is defined as its length and the shorter axis is its width. For propscars less than 1.5 m in width, only a single row of stakes/spikes and seagrass transplants is used. The stakes/spikes and transplants are inserted in the middle of the scar and the row runs the length of the injury. The first stake is inserted at the beginning of the scar (at 0.0m along its length). Additional stakes are then placed along the injury with 2.0 m between each stake. Thus, for example, a scar that is 10 m in length would have six stakes. Three seagrass transplants are inserted between the first two stakes, at distances of 0.5 m, 1.0 m, and 1.5 m along the scar. Seagrasses are not transplanted directly under the stakes. This planting pattern is repeated for the length of the injury. A 10 m scar would require 15 seagrass transplants. For scars between 1.5 and 2.0 m in width, two rows are inserted. The first, a row of stakes and planting units as described above, is inserted 0.5m into the scar. The second row is composed of only seagrass planting units and is inserted 1.0m into the scar. Thus, the two rows divide the width of the scar into thirds. Additional seagrass transplants are placed in the second row instead of stakes (resulting in a row of 16 transplants for a 10 m scar). This general pattern is maintained for wider propscars, blowholes, and berms. Additionally, the perimeter of blowholes is staked at 2.0-meter intervals. Over time, stakes/spikes may be re-positioned and additional seagrass transplants inserted as necessary during monitoring events.

2.2.5 Sediment Fill

Blowholes are a common seagrass injury associated with vessel groundings. In general, the size of the vessel grounded and degree of propeller force used by the grounded vessel or the salvor to remove the vessel correlates to the size of the blowhole. The filling of blowholes, or in some circumstances wide propeller scars, is a rapid way of returning the seafloor to its original grade. In general, any excavation with an escarpment (i.e. drop-off) greater than 20 cm deep at the perimeter is considered a potential candidate for filling. The focus of this alternative is to stabilize the substrate as soon as possible after an incident to prevent further deterioration from erosion and to prepare the area for colonization by neighboring or transplanted seagrasses. When this alternative is determined to be most appropriate, sediment fill, (e.g. 0.25 inch limestone pea rock) initially garnered from quarries, will be transported to the site and directly placed in the designated injury areas. No visual impairment will occur and many of the repairs will be indistinguishable from surrounding substrate within a short period of time. All operations will conform to engineering specifications and comply with federal and state permits, including an Army Corps of Engineers (ACOE) permit, and a *de minimus* permit from the Florida Department of Environmental Protection to allow seagrass restoration (stake, plant and fill) in sanctuary waters.

2.2.6 Sediment Tubes

An additional seagrass restoration technique involves the placement of biodegradable sediment-filled fabric mesh tubes (referred hereinafter as “sediment tubes”) inside of the trench created by propeller scars or on top of sediment fill in blowholes. These sediment tubes are effective in reducing erosion rates in injuries and fostering conditions suitable for natural re-colonization of the injured area by neighboring seagrasses and growth of seagrass transplants. Sediment tubes as a restoration technique may be appropriate in a variety of circumstances, including but not limited to, propeller scar injury excavations and small blowholes or when blowhole fill requires a protective barrier to reduce erosional forces. As such, the design of tubes will be slightly tailored to the specific geometry of each injury. Most of the tube deployments will be comprised of two tubes laid atop one another, capping the sediment fill placed in the excavation. The tubes replace the 10 cm above-grade topping of sediment fill required when tubes are not used. If seagrass transplants are also required, *H. wrightii* transplants will be planted in the tubes. Depending on the specific context of the injury, sediment tubes may be used in combination with any other restoration technique to expedite stabilization and recovery of the injured area. A primary advantage of using sediment tubes is their ability to mitigate erosional forces that may otherwise act to remove or

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displace the sediment fill. Depending on the specific site conditions of an injury site, it is foreseeable that restoration actions may include a combination of fill, tubes, and berm redistribution in order to most effectively stabilize the site.

2.2.7 Berm Redistribution

Blowhole and large propeller scar injuries often create berms of sediment surrounding the injury site. In some circumstances, where the displaced fill is directly adjacent to the injury site and easily accessible, restoration experts may be able to return the displaced fill back into the injury by either raking or water-dredging, or some combination of the two. However, this is only an alternative when doing so will not injure any seagrass that may still be living below the berm. Redistribution of fill is an immediate, low-cost, and low-risk restoration action that advances stabilization of the injury site and recovery of the area previously covered by sediment. In addition, redistribution of fill may minimize injury to adjacent seagrass beds covered by the berms created by the incident.

2.2.8 Sod Replacement

When appropriate, large chunks of seagrasses with intact rhizomes that were dislodged as a result of an injury may be placed back into a shallow propscar injury or blowhole. This alternative is suitable for shallow blowholes or propscars where additional sediment fill is not needed for the replaced seagrass to continue to thrive once replaced. This restoration technique expedites recovery of the injured sites, resulting in direct and indirect ecological and socioeconomic benefits associated with healthy seagrass ecosystems. Where feasible, sod replacement will be done immediately after injury assessment to maximize the chance of sod survival.

2.2.9 Water Markers

Water markers and other aides to navigation, such as shoal markers and regulatory signs, often assist boaters to safely navigating the treacherous shoals and difficult channels of shallow Florida Keys waterways. These devices help to prevent natural resource injury as these waterway markers direct boaters to use the deep water of navigation channels instead of the shallow seagrass flats, banks and shoals where the potential for running aground is high. Regulatory signs for no motor zones are an attempt to prevent boaters from entering and injuring shallow seagrass flats with high wildlife habitat value. Regulatory signs for idle speed/no wake zones endeavor to prevent boats from disturbing shoreline vegetation and resuspending sediments with their wakes.

In shallow water environments that have been identified as highly impacted from vessel groundings, waterway markers may be installed to reduce natural resource injuries and allow for the restoration of disturbed natural communities. Prior to installing markers, all issues related to the size, location, and expected lifetime will be approved by all appropriate and necessary agencies. The use of waterway marking as a restoration tool must also consider maintenance and operational issues.

2.2.10 Exclusion Cages

When injuries to seagrass beds occur near coral reefs, it is especially difficult for the seagrass to reestablish itself after restoration. A large variety of herbivores live in or frequent coral reefs and thus put abnormally high grazing pressure on nearby seagrass. Uninjured, well-established seagrass beds can sustain this pressure, but new transplants are quickly grazed to the point where they cannot sustain themselves because they are planted as smaller fragments or units, which are not integrated clonally as are plants growing in an established meadow. However, research has shown that exclusion cages placed around new transplants for three to four months allow the beds to establish themselves to the point where they are sustainable after the cages are removed (Fonseca et-al 1994). Each exclusion cage must also be securely fastened to the

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substrate so that it does not become detached. This is particularly important in areas where cages are exposed to storm waves, ground swells and other high-energy events.

2.3 PROPOSED ACTIONS

In most seagrass restoration projects, a combination of one or more of the alternatives presented will be identified as the preferred alternative(s) in an injury-specific restoration plan. Trustees with expertise in seagrass restoration ecology and first-hand experience with the grounding site select the proposed preferred alternative. Berm redistribution and sod replacement will occur at the time of injury assessment, if warranted. Typically, seagrass transplants will be accompanied with bird stakes if the water depth is less than 1.5 meters or fertilizer spikes if water depth is greater than 1.5 meters. Exclusion cages will be placed over seagrass transplants in areas close to coral reefs. In addition, if the site-specific conditions warrant sediment fill for blowholes or sediment tubes for wide propeller scars or blowholes, seagrass transplants and bird stakes will be inserted after sediment placement activities. Finally, if it is determined that the grounding site is likely to recover rapidly or primary restoration is not appropriate due to other reasons, the no-action alternative may be assigned for part or all of the injury site. Table 2-2 summarizes the alternatives available, the conditions under which they may be chosen, and the ultimate results of their applications.

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Table 2-2: Seagrass Restoration Alternative Matrix/Comparison

ALTERNATIVE	SITE CONDITION	RESULT
No Action: Leaving the injury untouched.	Chosen for injuries where there is a relatively small likelihood of secondary injury before natural recovery occurs, or where any restoration is considered too difficult to undertake due to high-energy conditions.	<ul style="list-style-type: none"> Natural recovery occurs on a longer time scale relative to restoration activities. <p>OR</p> <ul style="list-style-type: none"> Further deterioration of the seagrass bed occurs due to ineffective natural recovery.
Seagrass Transplants: Planting seagrass (<i>S. filiforme</i> and <i>H. wrightii</i>) taken from donor sites in injured areas including berms, blowholes and/or prop scars.	Often selected at low to moderate energy sites, where the probability of transplant loss due to high water velocity is lowest.	<ul style="list-style-type: none"> Stabilization of sediments decreases injury recovery time. Planting faster growing opportunistic species like <i>H. wrightii</i> or <i>S. filiforme</i> serves as a temporary substitute for the climax species, <i>T. testudinum</i>.
Bird Stakes: Insertion of stakes upon which birds roost, dropping their feces on and thus fertilizing seagrass beds. Inserted into berms, blowholes and/or prop scars.	Used on seagrass beds in water depths of 1.5 meters or less (mean high water).	<ul style="list-style-type: none"> Bird feces reach the seagrass floor for as long as the stakes are in place. Colonization of seagrasses into disturbed sediments is facilitated and/or seagrass transplants grow at a faster rate than natural recovery. Fertilizer is released regularly over an area of approximately 3 square meters below the stake
Fertilizer Spikes: Insertion of chemical fertilizer spikes that release fertilizer into the sediments of replanted seagrass beds over a period of 3-4 months. Inserted into berms, blowholes and/or prop scars.	Used on replanted seagrass beds when water depths are greater than 1.5 meters or when bird stakes are inappropriate due to hazards to navigation or risk of vandalism.	<ul style="list-style-type: none"> Colonization of seagrasses into disturbed sediments is facilitated and/or seagrass transplants grow at a faster rate. A concentrated dose of nutrients is delivered in a small area that directly benefits individual planting units
Sediment Fill: Filling of blowholes or wide propeller scars with sediment similar to that of the surrounding area.	Used in injuries greater than 20 cm deep.	<ul style="list-style-type: none"> The seafloor is rapidly returned to its original grade. The substrate is stabilized quickly after an incident to prevent further deterioration from erosion and to prepare the area for colonization by neighboring or transplanted seagrasses.
Sediment Tubes: Placement of biodegradable sediment-filled fabric mesh tubes inside the trench of a prop scar or blowhole.	Often used in narrow excavations (such as prop scars) deeper than 20 cm or to cap fill placed in larger blowholes in high energy environments	<ul style="list-style-type: none"> Erosion rates are reduced. Conditions are made more suitable for natural re-colonization of the injured area by neighboring seagrasses and growth of transplants is fostered.

Table 2-2: Seagrass Restoration Alternative Matrix/Comparison (continued)

ALTERNATIVE	SITE CONDITION	RESULT
Berm Redistribution: Returning displaced fill back into the injury	Undertaken when it is believed that doing so will not cause more harm by damaging live seagrass below the berm.	<ul style="list-style-type: none"> • Stabilization of the injury site and recovery of the area previously covered by sediment is enhanced.
Sod Replacement: Replacement of large chunks of seagrasses with intact rhizomes back into a shallow propscar injury or blowhole.	Used in shallow injuries where intact seagrass chunks can be found	<ul style="list-style-type: none"> • Regrowth of dislodged sod. • Stabilization of the injury site and recovery of the area
Water markers: Placement of navigational aids for boaters.	Used in shallow water environments identified to be high frequency grounding sites.	<ul style="list-style-type: none"> • Future groundings are minimized in the area.
Exclusion Cages: Enclosing seagrass transplants with a cage to prevent it from being overgrazed.	Used in restoration sites located near coral reefs.	<ul style="list-style-type: none"> • Allows seagrass beds to reestablish themselves to the point where they are not overgrazed when the cages are removed.

CHAPTER 3. AFFECTED ENVIRONMENT

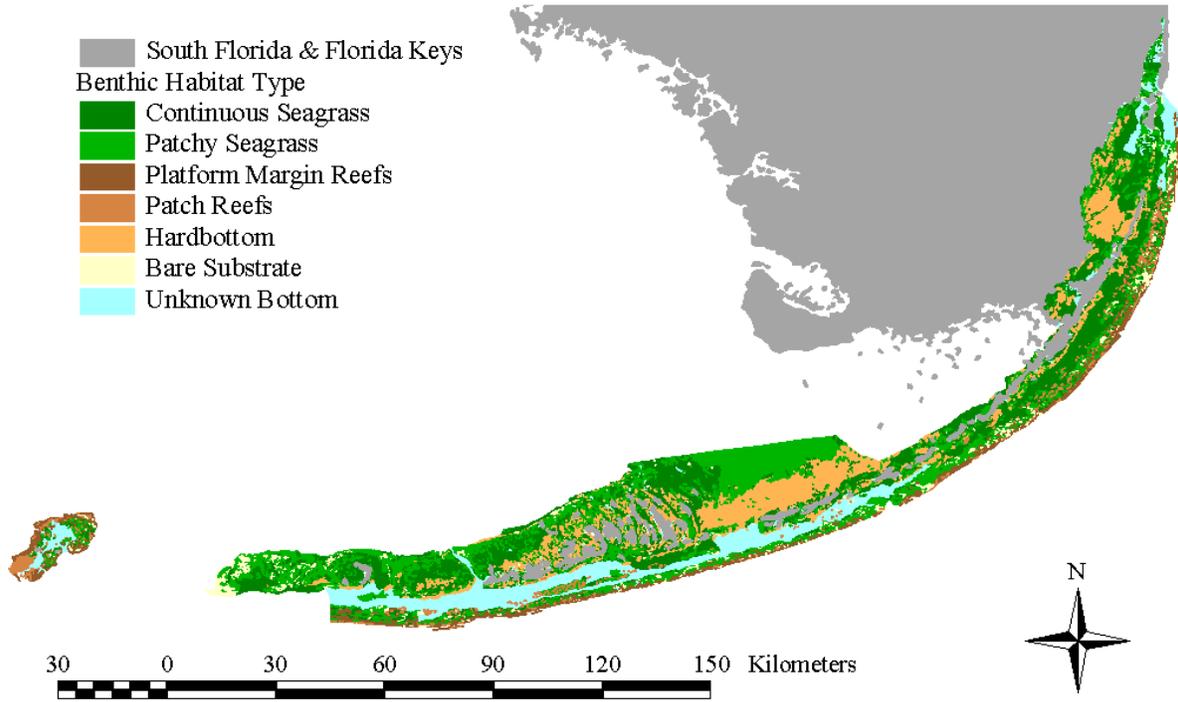
This chapter provides background information on the potentially affected environments associated with seagrass restoration projects in the FKNMS. As this PEIS is regional in scope, emphasis is placed on presenting a range of affected resources over the entire FKNMS region. Given the size of the FKNMS and uncertainty with regard to where exactly each restoration project will occur, by necessity, a site-specific discussion of potential restoration sites and specific environments affected is not possible.

3.1 LOCATION AND AREA USES

Located almost wholly within Monroe County, the FKNMS consists of approximately 9,500 km² of coastal and oceanic waters and submerged lands. Uses of the general area include diving, fishing, snorkeling and boating. The FKNMS holds not only recreational and commercial value, but also scientific, historical, ecological and educational value (NOAA 2000; 2002). Many scientists view the area as a living laboratory in which numerous scientific studies and other research are being conducted (UNEP/IUCN 1988; NOAA 2002). Many marine species found within the FKNMS's boundaries hold commercial or recreational value, including spiny lobster, grouper, mackerel, dolphin, snapper, hogfish, tarpon, pompano, jack, and bonefish (NOAA 1995b). Although fishing for these species in portions of the FKNMS is allowed, certain restrictions apply, such as not using harmful fishing methods (e.g. wire fish traps) (UNEP/IUCN 1988; NOAA 2002).

Seagrass banks are located on both the Atlantic Ocean and Gulf of Mexico sides of the FKNMS, encompassing approximately 1,860 square kilometers (Figure 3-1). *H. wrightii*, *S. filiforme* and *T. testudinum* can be found in mixed beds or alone at depths of between 1 and 20 meters where suitable substrate and favorable physical conditions exist. *H. wrightii* tolerates surface exposure better than the other species, and usually grows in shallower water. *T. testudinum* forms extensive mature meadows, usually at depths of less than 10 to 12 meters, but can be found at greater depths in less density. Between 12 and 15 meters, *S. filiforme* replaces *T. testudinum*, and *H. wrightii* is dominant below 15 meters, but does not form dense stands. (NOAA 1996c). Table 3-1 provides a description of the dominant transport processes and benthic community composition for various regions within the FKNMS.

Figure 3-1: Benthic Map of the Florida Keys



Source: FMRI/NOAA 1998

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Table 3-1: Benthic Chart of the Florida Keys

AREA	DESCRIPTION AND DOMINANT TRANSPORT PROCESSES	BENTHIC COMMUNITIES
Florida Bay	Semi-isolated, shallow basins and banks dominated by discharge from Taylor Slough; restricted circulation and relatively high variability in physical-chemical parameters.	Mostly seagrass, but also bare sand patches, and occasional exposed hard-bottom substrate; benthic habitats vary considerably across the bay.
Nearshore Middle Keys	Shallow, unconfined, large tidal passes dominated by Florida Bay water with wind-driven circulation and tides.	Mostly seagrass, particularly in channels, but also extensive areas of low-relief hard-bottom habitats within 1 km of shore.
Nearshore Lower Keys	Shallow backcountry, small tidal passes transporting water from the southwest Florida shelf and dominated by wind-driven circulation and tides.	Mostly seagrass, bare sand, and algae, but also extensive areas of low-relief hard-bottom habitats.
Offshore Upper Keys	Area confined by reef tract and dominated by Florida current frontal eddies.	Mostly seagrass and sand, but extensive patch reef and bank reef areas in Hawk Channel and along reef tract; most extensive reef development in the Florida Keys.
Offshore Middle Keys	Area confined by reef tract and dominated by onshore currents and tidally driven exchange with Florida Bay.	Mostly seagrass and sand areas with very poor reef development offshore.
Offshore Lower Keys	Area confined by reef tract and dominated by wind-driven circulation in Hawk Channel and offshore gyres.	Mostly seagrass and bare sand, but extensive areas of hard-bottom with moderate patch reef and bank development.
Marquesas	Unconfined area dominated by southwest Florida shelf water and gyre migrations from the Florida current.	Mostly seagrass with very poor development of reefs and lack of extensive low-relief hard-bottom habitats.
Dry Tortugas	Deeper unconfined area dominated by variability in the Gulf of Mexico Loop Current and the Tortugas Gyre.	Mixture of seagrass, sand, and hard-bottom areas; moderate shallow-water reef development near islands.

Source: Chiappone 1996

Seagrass beds are highly productive, faunally rich ecosystems that provide food, protection and nesting sites for many species of fishes, amphibians, reptiles, birds, and mammals. Seventy to 90 percent of the harvested species in the Gulf depend on seagrass beds during at least part of their life cycle. Dense seagrass also provide protected habitat for a wide variety of juvenile fishes and invertebrates (NOAA 1996c).

Research has shown no common trends in the FKNMS in seagrass health in terms of cover or community composition. However, because the length of time seagrass beds take to eutrophicate is on the order of decades, and the interaction man has with the natural dynamics of these systems is not completely understood, it is difficult to say with certainty whether seagrass beds in the FKNMS are growing or shrinking (Forquorean et al. 2001).

3.2 SURROUNDING LAND USE

The terrestrial area surrounding potential seagrass restoration projects incorporates all of the Florida Keys (primarily Monroe County) and a variety of land-use activities. The Florida Keys has many different categories of zoning for residential and commercial development and environmental protection. The approximately 480 marinas and boat launches that provide access to the FKNMS serve as gateways for many visitors (Monroe County 1995). Table 3-2 reflects the most recent (1991) distribution of terrestrial land use activities in Monroe County. The data does not include water bodies or offshore islands. A high percentage of land (33.7%) has been set aside for conservation.

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Table 3-2 Monroe County Existing Land Use (in acres)

	Upper Keys	Middle Keys	Lower Keys	Total	% of Total
Single-Family	3,391	2,037.0	2,950.9	8,378.9	13.7%
Mobile Homes	618.9	130.8	313.1	1,062.8	1.7%
Multi-Family	391.6	220.9	25.2	637.7	1.0%
Mixed Residential	201.5	158.3	351.1	710.9	1.2%
<i>Residential Subtotal</i>	4,603.0	2,547	3,640.3	10,790.3	17.6%
General Commercial	462.1	276.6	255.4	994.1	1.6%
Commercial Fishing	10.7	84.6	151.8	247.1	.4%
Tourist Commercial	421.1	460.5	147.3	1,028.9	1.7%
<i>Commercial Subtotal</i>	893.9	821.7	554.5	2,270.1	3.7%
Industrial	81.7	55.2	377.9	514.8	0.8%
Agricultural/Maricultura l	0.0	41.9	0.0	41.9	0.1%
Education	65.8	31.7	8.9	106.4	.2%
Institutional	46.2	37.3	32.8	116.3	.2%
Public Buildings/Grounds	11.3	32.6	16.9	60.8	.1%
Public Facilities	36.1	446.2	56.8	539.1	.9%
Military	0.0	0.0	3,288.7	3,288.7	5.4%
Historic	0.0	0.0	.5	.5	0.0%
Recreation	351.2	940.7	499.4	1,791.3	2.9%
Conservation	11,542.6	623.1	8,530	20,695.7	33.7%
Vacant	5,123.1	2,882.5	13,121.6	21,127.2	34.4%
Total	22,754.9	8,459.9	30,128.3	61,343.1	100%
Percent of Total	37.1%	13.8%	49.1%	100%	

Source: Monroe County Board of Commissioners, 1993.

3.3 CLIMATE

The Florida Keys are considered a subtropical zone characterized by warm, humid summers, with abundant rainfall and generally warm, moderately dry winters. The average annual temperature is 26 degrees Celsius (°C), with an average low of 21°C in January, and an average high of 30°C in July. The average annual rainfall is 100 centimeters. The heaviest precipitation occurs during the summer and early to mid-autumn. Winds average 19 kilometers per hour. The prevailing wind direction is from the east-southeast during the summer and from the northeast during the winter. Winds are typically strongest during the winter months and calmest in the spring and autumn. The hurricane season is from June to November, with the peak threat existing from mid-August to late October (NWS 1994).

3.4 AIR QUALITY

National Ambient Air Quality Standards (NAAQS) have been set for six “criteria” pollutants (sulfur dioxide, carbon monoxide, ozone, nitrogen oxides, lead, and particulate matter). The problems associated with carbon monoxide and particulate matter are usually related to localized conditions, such as congested traffic intersections or construction activities. The other criteria pollutants are associated with regional problems that result from the interactions of pollutants from a great number of widely dispersed sources (e.g., a large city containing many stationary and mobile sources). The Florida Department of Environmental Protection (FDEP) monitors the concentrations of the criteria pollutants and, where necessary, is responsible for developing State Implementation

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Plans (SIPs) to ensure that the national standards are achieved and maintained. Areas within the state that fail to meet the NAAQS are designated as “non-attainment areas” and are potentially subject to regulatory enforcement. Potential seagrass restoration sites are located in Monroe County, which is classified as being in complete attainment of the NAAQS as of March 1999 (USEPA 1999a).

3.5 NOISE

Depending on the location of the restoration sites, noise will be generated from a variety of sources. It is expected that for most restoration sites, the only primary noise sources directly attributable to the restoration will be motor vessels traveling to the project site and any other mechanical equipment that may be required (e.g. pumps, compressors, generators).

3.6 GEOLOGY

The dominant geological feature in the FKNMS is the Florida Plateau, a large carbonate platform composed of carbonate marine sediments approximately 7,000 meters in thickness. The plateau includes all of Florida and the adjacent continental shelves of the Gulf of Mexico and the Atlantic Ocean. The platform has been an area of shallow water carbonate deposition since at least the Jurassic period (136 to 190 million years ago). Sediments accumulating in the area for 150 million years have been structurally modified by subsidence and sea level rise (Continental Shelf Associates 1990). Sea level fluctuations attributed to glacial effects are largely responsible for the present morphology of the area. Sea level dropped by 15 to 30 meters during the Wisconsin glacial period, exposing the entire platform to marine and subaerial erosion. Sea level began to rise again approximately 6,000 years ago, flooding the area and forming the current physiographic character of the region. It is expected that the substrate at most restoration sites will be a combination of dense carbonate sand and mud, with significant amounts of larger pieces of broken shells and coral skeletons. At most sites, the combination of the seagrass rhizome and root mat yields a very dense, packed substrate that is difficult to disturb (Zieman 1982).

3.7 WATER QUALITY

Numerous factors exist that influence seagrass distribution and relative abundance. Some of the most identifiable include temperature, salinity, water depth, sediment depth, wave and tidal currents, water column transparency, and nutrient loading (Fonseca 1990; Kenworthy and Haurert 1991; Zieman 1982; Zieman and Zieman 1989). If seagrasses can exist within the other above specified tolerance criteria, light penetration is the most important factor affecting their growth and survival. In fact, it is possible to predict seagrass growth and survival from the known levels of certain key water-quality parameters affecting light transmission (Dennison et al. 1993; Gallegos and Kenworthy 1996). Six frequently measured water quality parameters correlated with the growth and survival of seagrass are: 1) total suspended solids, 2) chlorophyll a, 3) dissolved inorganic nitrogen, 4) dissolved inorganic phosphorus, 5) Secchi depth, and 6) light attenuation. Two of these parameters, total suspended solids and chlorophyll a, are directly responsible for water column transparency to light (i.e., turbidity), while dissolved inorganic nitrogen and phosphorus act indirectly on light attenuation by stimulating algae growth. Secchi depth and light attenuation are quantitative measures of the effect the other four parameters have on water transparency (Kenworthy and Haurert 1991; Kenworthy and Fonseca 1996).

3.8 PHYSICAL PARAMETERS

FKNMS is part of an open-ended environment influenced by the Caribbean Sea, Gulf of Mexico, and Florida Bay. A complex system of currents runs through these bodies of water. Wind-driven currents are characteristic of the Florida Keys because shallow depths prevail throughout the area (Schomer and Drew 1982). Recent studies using satellite tracked surface drifters indicate a net southerly flow from the Gulf of Mexico to the Florida reef tract through western Florida Bay that varies with season, stronger in the winter (3 to 4 cm/s) and weaker in summer (1 to 2 cm/s). (Lee et al. 1998).

Tides in the Florida Keys generally exhibit two highs and two lows of uneven amplitude (height) per tidal day (Schomer and Drew 1982). The tidal range decreases from Fowey Rocks in the upper Florida Keys to Sand Key offshore of Key West. Tides in the lower Keys area vary approximately 0.3 to 0.6 meters. The highest observed water level in the area was recorded at Coupon Bight near Big Pine Key at 0.9 meters above the mean lower low water (MLLW) level in 1974; the lowest observed tide was measured in the Big Pine Key Viaduct, Pine Channel, at -0.3 meters below MLLW in 1974 (NOAA 1998).

Tidal currents reverse in direction with the ebb and flow of tides. These currents show a slight westward component, especially in the middle and lower Florida Keys (Enos 1997; Smith 1991). Tidal current velocities range from 5 to 15 centimeters per second, but velocities as high as 130 centimeters per second have been recorded. However, these tidal components are usually offset by wind. As mentioned above, recent studies indicate that there is a long-term net flow from Florida Bay/Gulf of Mexico to the Atlantic Ocean (Pitts 1994; Smith 1994).

3.9 BIOLOGICAL RESOURCES

3.9.1 Seagrass

The seagrass meadows of south Florida constitute one of the most important natural resources in the state (Iverson and Bittaker 1986; Fourqurean et al. 2000). They have high natural rates of primary productivity that is greatest during the summer (Zieman and Zieman 1989). These high rates of growth result in large leaf canopies that serve as an important food source and critical habitat for important commercial and recreational fish and shellfish species. Bank-top *T. testudinum* in Florida Bay has been found to support higher faunal densities than shallow seagrasses elsewhere in south Florida (Sheridan 1997).

Three dominant species of seagrasses found in high salinity, open coastal waters are turtle grass (*T. testudinum*), manatee grass (*S. filiforme*) and shoal grass (*H. wrightii*). The first two species are usually associated with stable, near-marine salinities (20-36%), open coastal water, and subtropical to tropical temperatures. Shoal grass is found in more estuarine conditions, but also forms dense stands in open coastal, high-salinity regions and in areas of high water movement, or in tidal flats where it is subject to exposure. All three species have high heat tolerance and can survive temperatures of 36°C for 4 weeks and 39°C for up to 36 hours (Dawes 1987). As much as 90% of the biomass of *T. testudinum* can be in belowground tissue, thus the sediment stabilizing abilities of *T. testudinum* are strong (Zieman 1982). *H. wrightii* has narrow leaves and a shallow root and rhizome system. While it is a rapid colonizer, it has less sediment stabilization ability than *T. testudinum* and *S. filiforme*. While all of these seagrasses are important, *T. testudinum* has the highest total habitat values and services (Zieman 1982).

Seagrass beds in high current and/or wave areas typically develop along channel bands and shoals in the form of discrete, mounded patches. In quiescent areas, seagrasses form a more continuous cover, resembling what one generally conceives of as a meadow. The exception to this is when there is insufficient unconsolidated sediment on top of underlying bedrock for the plants to root. In these instances, even though the area may be a quiet backwater, seagrasses will only be able to grow in depressions in the bedrock where sufficient sediments exist (Fonseca 1990).

Main factors influencing seagrass distribution in shallow coastal waters include nutrient availability, light, temperature, and salinity (Tomasko and Lapointe 1991; Fourqurean et al. 1992b). Studies have shown that *T. testudinum*, the dominant seagrass in the FKNMS, is limited primarily by phosphorus (Powell et al. 1989; Fourqurean et al. 1992a). The availability of phosphorus, principally in subsurface sediment waters, limits development of grass beds and controls their composition (Fourqurean et al. 1995).

Fonseca (1990) gives an extensive listing of the characteristics and functions performed by seagrasses as follows:

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- 1) a high rate of leaf growth,
- 2) the support of large numbers of epiphytic organisms (which are grazed extensively by herbivores),
- 3) the rapid leaf production results in large quantities of organic material that decomposes in the meadow or is transported to adjacent systems. Since few organisms graze directly on the living seagrasses, the detritus formed from leaves supports a complex food web,
- 4) shoots retard or slowing currents, by enhancing sediment stability and increasing the accumulation of organic and inorganic material,
- 5) roots bind sediments, reducing erosion and preserving sediment microflora,
- 6) plant and detritus production influence nutrient cycling between sediments and overlying waters,
- 7) decomposition of rhizomes provides a significant and long-term source of nutrients for sediment microheterotrophs (microscopic organisms unable to synthesize their own food),
- 8) roots and leaves provide horizontal and vertical complexity which, coupled with abundant and varied food resources, leads to densities of fauna generally exceeding those in unvegetated habitats, and
- 9) movement of water and fauna transports living and dead organic matter (particulate and dissolved) out of seagrass systems to adjacent habitats.

3.9.2 Benthic Organisms

Seagrass habitats are extremely important for the productivity of fisheries and wildlife in south Florida. Extensive submarine seagrass meadows bridge the distances between coral reefs and mangroves, which have vastly different physical requirements. Early studies emphasized the role of mangrove habitats as a food source and nursery. The results of more recent investigations suggest that seagrass beds in open water environments and within mangrove-lined bays contain the densest populations of organisms. Studies in south Florida bays show that a large proportion of the annual landings depend on seagrass habitat, and there is a clear association between fisheries catch and seagrass cover (Zieman et al. 1989).

A number of invertebrate groups depend on seagrass habitat, including arthropodans, echinoderms, mollusks (almost 200 species), annelids and porifera. The structure of the grass carpet with its calm water and shaded microhabitats provides living space for a rich epifauna of both mobile and sessile organisms. It is these organisms that are of greatest importance to higher consumers within the grass beds, especially fish (Zieman 1982).

Another important feature on many shallow banks is the inconspicuous populations of Finger Coral, *Porites furcata*. Living and dead colonies of *Porites furcata* provide habitat for many species of invertebrates, including brittle stars, shrimp, crabs, anemones, and young spiny lobster, *Panulirus argus*. Various species of juvenile tropical fish also find shelter and food in and around the intertwining branches of this diminutive but prolific coral (Hudson 1993).

3.9.3 Fish and Invertebrate Populations

Many marine groups or species of fishes found within the FKNMS hold recreational and commercial value (NOAA 1995a; Acosta et al. 1998). Some of the most important recreational fishes are gray snapper, spotted sea trout, red drum and snook (Schmidt and Alvarado 1998). Four invertebrate species found in the FKNMS have important recreational and commercial value to the South Florida economy: blue crab, stone crab, spiny lobster and pink shrimp. Tropical seagrass meadows can support a high diversity of fish species. For example, in a large-scale sampling study in Florida Bay, 92 species of fish comprising 42 families were collected (Thayer et al. 1987). A listing of the families found in the survey is presented in Table 3-3. Densities of fishes are typically greater in seagrass habitat within south Florida's estuaries and coastal lagoons than in adjacent habitats. However, recent work has demonstrated that mean densities of certain macrofaunal communities (fishes and decapods) are usually significantly higher in *T. testudinum*

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beds than in *H. wrightii* or other surrounding habitats, although the reverse was true for species richness and diversity (Sheridan et al. 1997).

Table 3-3. Families of fishes collected by bottom and surface trawling in Everglades National Park (Florida Bay) during 1984 and 1985.

Family Name	Common Name	Family Name	Common Name
Albulidae	Bonefishes	Antennariidae	Frogfishes
Ariidae	Sea catfishes	Atherinidae	Sliversides
Balistidae	Leatherjackets	Batrachoididae	Toadfishes
Belonidae	Needlefishes	Blenniidae	Blennies
Bothidae	Flunder	Bythitidae	Brotulas
Callionymidae	Dragonets	Carangidae	Jacks
Clinidae	Clinids	Clupidae	Herrings
Cynoglossidae	Tonguefishes	Cyprinodontidae	Killifishes
Dasyatidae	Stingrays	Diodontidae	Porcupinefish
Echeneidae	Remoras	Engraulidae	Anchovies
Ephippidae	Padefishes	Exocoetidae	Flyingfishes
Gerreidae	Mojarras	Gobiesocidae	Clingfishes
Gobiidae	Gobies	Haemulidae	Grunts
Lutjanidae	Snappers	Mugilidae	Mulletts
Ogcocephalidae	Batfishes	Ostraciidae	Boxfishes
Poeciliidae	Livebearers	Scaridae	Parrotfishes
Sciaenidae	Drums	Serranidae	Sea Basses
Soleidae	Soles	Sparidae	Porgies
Sphyraenidae	Barracudas	Sphyrnidae	Sharks
Syngnathidae	Pipfishes	Synodontidae	Lizardfishes
Tetraodontidae	Puffers	Triglidae	Searobins

Source: adapted from Thayer et al. 1987

3.9.4 Endangered and Threatened Species

Several species of turtles and marine mammals that frequent seagrass banks in the FKNMS are listed as federally endangered or threatened species. Federally endangered species of sea turtles in the FKNMS include the leatherback turtle (*Dermochelys coriacea*), green turtle (*Chelonia mydas*), Kemp’s ridley turtle (*Lepidochelys kempii*), and hawksbill turtle (*Eretmochelys imbricata*). In addition, the loggerhead turtle (*Caretta caretta*), listed federally as threatened, might also be a seasonal visitor. In Florida, marine turtles are provided protection through Florida’s Marine Turtle Protection Act and the federal Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. §§ 1531 et seq.; Appendix A).

An endangered or threatened marine mammal that might occur in the area is the West Indian manatee (*Trichechus manatus*), a species indigenous to the Florida Keys. Another common mammalian visitor is the bottle nosed dolphin (*Tursiops truncatus*). Marine mammals are protected under the Marine Mammals Protection Act of 1972 (16 U.S.C. §1361 et seq.), and some are also protected by the ESA of 1973.

As stated previously, the federally listed species of turtles and marine mammals are not year-round residents of seagrass banks in the FKNMS, but are known to occur in or travel through the area during seasonal migrations (see Table 3-4). The annual sea turtle nesting and hatching season in Monroe County, Florida, is considered to be April 15 to October 31. Although turtles might feed while in the vicinity of shallow banks, they have no specific dependence on them. Generally, marine mammals (other than manatees) may pass through the area during the winter months, but they do not depend on the banks for food, shelter, or necessary mating habitat (Lott 1996). In Monroe County, manatees range from upper Key

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Largo to Key West and generally inhabit canals, creeks, and surrounding waters throughout the year. A variety of birds feed or nest near seagrass banks, and perch on bird stakes in the area.

Table 3-4. Endangered and threatened species occurring in seagrass habitats within the FKNMS

Species	Approximate Time of Occurrence
Leatherback turtle	April to July
Green turtle	June to September
Kemp's ridley turtle	April to June
Hawksbill turtle	July to October
Loggerhead turtle	April to June
West Indian manatee	Year-round, depending on the temperature and distribution of seagrasses
Arctic peregrine falcon	Fall and winter
Florida sandhill crane	Varies
Least tern	Varies
Osprey	Varies
Roseate tern	Varies
Little blue heron	Varies
Piping plover	Varies
Reddish egret	Varies
Southeastern snowy plover	Varies

Source: Lott 1996, NOAA 1996c

3.10 CULTURAL RESOURCES

3.10.1 Background

European contact in the Florida Keys began with Spanish explorers in the 1500s. Spanish control of the Florida Keys region lasted into the 1700s. During this period, the Spanish established a chain of missionaries across what is now the State of Florida and also established a small but prosperous maritime trade network based in Cuba. The number of ships increased in the Florida Keys as other European countries began to travel to their colonies in the Americas. The shipping industry experienced a dramatic increase in volume during the period of 1700 to 1820 as trade and maritime technology made great advances. Also during that time, wreckers began to salvage cargoes from ships that had run aground on the Florida reef tract.

From 1820 to 1865, coastal commerce continued to grow, and coastal forts were constructed to defend the nation's southern boundary, particularly during the Civil War. This time period was also marked by the Seminole wars. The Seminoles were the predominant Native American group in the area before complete Euro-American settlement. From 1865 to 1912, various coastal ports began to flourish in Florida, a system of lighthouses was developed to aid in coastal navigation, and the American Merchant Marines and the modern Navy were established (Terrell 1994). Because the Florida Keys are located on important trade routes, shipwrecks have occurred in the area for centuries. Historically, Spanish ships dominated the waters in the Keys. Hurricanes, reefs, and military conflicts claimed hundreds of Spanish ships; in some cases, entire fleets were lost in the area (Terrell 1994). Salvage operations for shipwrecks began as early as the mid-1500s. Various groups (e.g., Spaniards, French, Dutch, English, Calusa Indians) are documented to have attempted recovery of vessels lost in the Keys (Terrell 1994).

3.10.2 Potential Historic Resources in Grounding Areas Within the FKNMS

Pre-Historic Remains - Lower sea levels during the Pleistocene ice ages made parts of the Continental Shelf accessible to primitive human groups then populating the Americas via the Bering Land Bridge (10,000 to 12,000 years before present). A Minerals Management Service (MMS) report on the region cites a poor probability for locating prehistoric remains at lower depths due to later human habitation after the area was inundated. Also, the apparent sea level rise in the area was slow, allowing for destruction of site remains by natural wave action and environmental forces. MMS considers the Florida Keys to have little potential for submerged prehistoric sites (Continental Shelf Associates, Inc. n.d.).

Native American Remains – Today, it is impossible to predict which seagrass banks and environs constituted a habitable island during the late prehistoric to European contact stages. It is possible that these islands were inhabited or visited by the maritime Calusa Indian people. There is a slightly better chance of Native American cultural remains in areas associated with the Calusa between 2500 years before present to European contact. (MMS 380 - 381).

Historic Period Remains - Between the Spanish regional presence in the sixteenth century through the late nineteenth century, the region was sparsely populated. However, shipwreck remains do exist in the Keys, primarily of Spanish, Portuguese, British, and U.S. origin (Terrell, 1994). NOAA and designated contractors will follow state and federal guidelines to ensure that restoration actions at injury sites do not in any way adversely impact historical remains, if present, to the extent that if deemed necessary, restoration may not occur or be significantly modified.

The coordinates of injury sites will be overlaid on a map of archeological/cultural resource site boundaries, provided by the Florida Division of Historic Resources, to determine if there is any overlap. The map includes archaeological sites for Monroe County, FL (including archaeological site boundaries and basic site attributes as recorded in the Florida Master Site File), field survey areas (containing cultural resource field survey project boundaries and basic survey attributes as recorded in the Florida Master Site File), and the National Register of Historic Places within the State of Florida. If there is no overlap, restoration of the injured resource will proceed as laid out in this document, unless what may be an archeological or cultural resource is found at the site during the assessment process. In this case, or in the case that the injured site does overlap with the archeological/cultural resource site boundaries, a survey of the area will be undertaken by an archeologist to determine whether or not restoration should be undertaken. One hundred nineteen injury sites have already been overlaid, the representations of which can be found below.

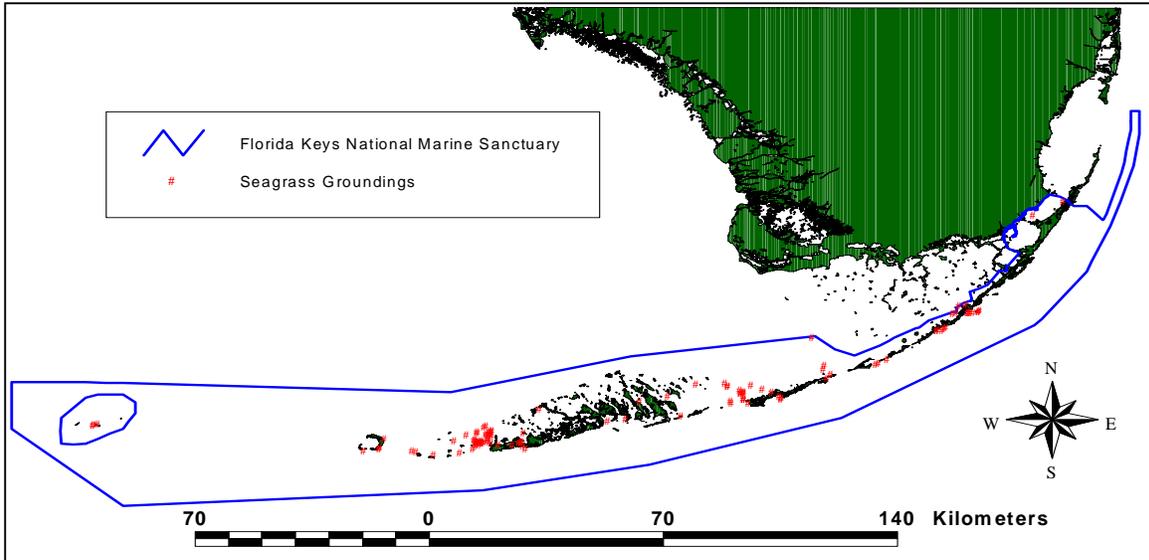


Figure 3-3. Location of the 119 seagrass grounding cases that have been assessed since Oct. 2000.

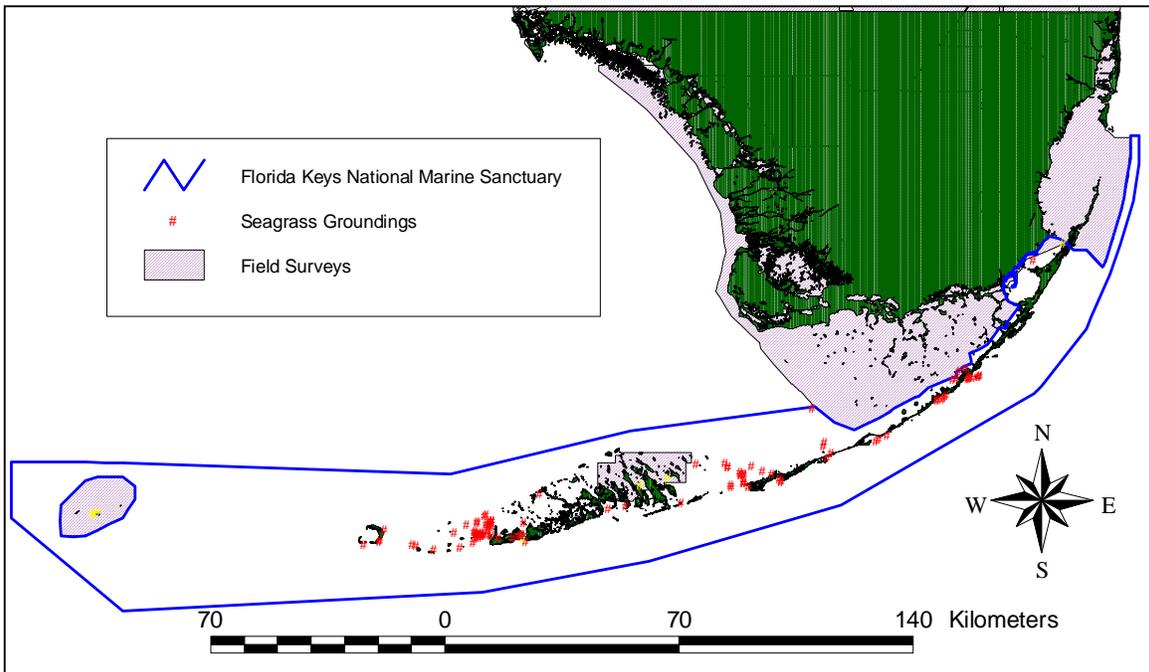


Figure 3-4. Seagrass groundings in relation to the field surveys as recorded at the Florida Master Site File; 4 seagrass cases within the FKNMS are inside field surveys.

3.11 HAZARDOUS AND TOXIC SUBSTANCES

Hazardous and toxic substances typically include (1) materials currently used as part of day-to-day manufacturing operations, (2) regulated substances such as asbestos and lead-based paints, and (3) any improperly disposed-of materials such as spilled or buried hazardous waste. None of these materials are expected to be encountered at the restoration sites due to their relatively remote locations. There are no Superfund sites located in Monroe County, FL. The United States Environmental Protection Agency's (USEPA) database indicates only one nearby Emergency Planning and Community Right-to-Know Act (EPCRA) Toxic Release Site in Marathon, FL: the Royal Palm Ice Plant, from which there has not been a reported release since 1988 (USEPA 1999b).

3.12 SOCIOECONOMICS

3.12.1 Region of Influence

The socioeconomic indicators described in this section include regional economic activity, employment statistics, and demographics. These indicators characterize the region of influence (ROI). An ROI is a geographic area selected as a basis on which the social and economic impacts of projects are analyzed. The ROI is the area most affected by changes resulting from project implementation and is usually based on where project employees reside, local commuting and purchasing patterns, and the size and scope of the proposed project. Typically, a county is the smallest unit of analysis for an ROI. Because the proposed activities, seagrass restoration, are relatively limited in scope and will involve few workers over a short period, the ROI for the social and economic environment is defined as Monroe County, Florida. Although residents of nearby counties, such as Broward and Dade, may be indirectly affected by project implementation (i.e. they may vacation in the Keys and fish on the seagrass banks, or have insurance companies who also cover residents in the Florida Keys) they will not be directly affected. Additionally, the economic base of these nearby counties is much more highly diversified into areas other than fishing and tourism than that of Monroe county.

Because a high percentage of Monroe County residents often use the banks for recreational and commercial fishing and conduct commercial tourism activities (approximately 46%) (English et. al. 1996), they will directly benefit from the restoration of seagrass banks to their baseline conditions. Additionally, the protection from storm events that seagrass banks provide has an impact on the vulnerability and value of their homes. However, because the dollar value of the restoration actions themselves is low, they will not create a significant number of jobs for Monroe county residents.

3.12.2 Regional Economic Activity

The primary sources of employment in the ROI are services, retail trade, and government services. As shown in Table 3-5, these sectors accounted for more than 75 percent of the county's total employment in 1999. The economy of Monroe County is heavily dependent on tourism. In 1996, proprietor's employment accounted for more than 21 percent of the county's total employment, compared to 14.5 percent for Florida and 16.4 percent for the United States (U.S. DOC 1998). This statistic indicates the central importance of small businesses in the tourist economy. A recent study estimated that tourist/recreational activities provided more than 46 percent of the county's employment and about 60 percent of the county's total economic output (English et al. 1996). Consistent with these statistics, four of the six largest employers in the county are tourism-related.

Table 3-5. ROI Employment by Major Sectors (2000 Monroe County)

Employment Sector	Percent of Total Employment
Services	39.4
Retail Trade	29.7
Government	8.8
Construction	6.2
Transportation, Com, Utilities	6.8
Finance, Insurance, Real Estate	4.8
Wholesale Trade	2.3
Manufacturing	1.6
Agricultural, Forest, Fisheries	0.9

Source: Key West Chamber of Commerce, 2002

In 1997-1998, recreating visitors to the Florida Keys spent an estimated \$1.38 billion in Monroe County, FL (Leeworthy and Vanasse 1999). In addition, a significant number of retired persons live in Monroe County, generating a large amount of income in transfer payments flowing into the local economy in the form of pensions, retirement pay, dividends and interest on investments, and social security. In 2000, an estimated 15 percent of the total population was 65 years of age or older. This creates a base of income in Monroe County that is independent of employment. In 1999, the per capita income was \$34,456, which is higher than the overall Florida per capita income average of \$27,781 (Key West Chamber of Commerce 2002).

The military and commercial fishing industry are also important sectors of the region’s economy. The unemployment rate for Monroe County was 2.5 percent in 2001, compared to 5.2 percent for the United States (Florida Keys Chamber of Commerce 2002). It should be noted that much of the employment is seasonal and rates vary during the year.

3.12.3 Demographics

In 2000, the population of Monroe County was estimated to be 79,589. In comparison to the previous decade where the population increased by 23.5% (1980-1990), the population of Monroe County increased by only 2% from 1990 to 2000. The population is projected to continue to grow, though at a slower rate. The population is projected to reach more than 101,000 by 2010, a 1.5 percent growth rate. Table 3-6 shows the racial/ethnic breakdown of the population estimates for 2000.

Table 3-6. Demographics of Monroe County

Race / Ethnicity	Percent of Total Population (1997)
White not Hispanic	77.2
Black not Hispanic	4.5
Hispanic	15.8
Other	2.5

Source: Key West Chamber of Commerce, 2002

Peak tourist populations occur from January to March of each year. The tourist season is longer in the Upper Keys than in the Lower Keys, extending from January to August, and is based on weekend tourists from Miami and south Florida. The functional population (the sum of the peak seasonal and resident population) was 159,113 in 2000 (Monroe County Growth Management 2001). The seasonal population accounts for nearly 56 percent of the functional population during the peak tourist season.

3.13 QUALITY OF LIFE

Within the FKNMS are nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs (NOAA 1996b). The quality of life of many residents in the Keys depends on the condition of these marine ecosystems. A survey of Monroe County residents regarding their recreational activities conducted by NOAA's Strategic Environmental Assessments Division (1997), found that 77 percent of residents participated in some form of outdoor recreation in the Keys. Thirty-two percent rated the quality of life in Monroe County as "excellent", while over 46% rated it as "good". Less than five percent rated it as "poor". Those who participated in outdoor recreation activities gave higher quality of life ratings than those that did not. Factors hypothesized to be related to outdoor recreation participation (e.g. climate, water activities, environment and access to natural resources) were among the top ten most important reasons for living in Monroe County. Those that participated in outdoor recreation activities rated these reasons higher than those that did not (NOAA 1995b; NOAA 1996b).

CHAPTER 4. ENVIRONMENTAL AND SOCIOECONOMIC CONSEQUENCES

4.1 INTRODUCTION

This section describes the potential environmental and socioeconomic consequences of the restoration alternatives presented in this document. The restoration alternatives to be discussed include: 1) no action, 2) seagrass transplants, 3) bird stakes 4) fertilizer spikes, 5) sediment fill, 6) sediment tubes, 7) berm redistribution, 8) sod replacement, 9) water markers, and 10) exclusion cages. The direct and indirect effects of each alternative are discussed with respect to 13 resource categories. For five of these categories, both the direct and indirect effects are identical for all 10 restoration actions. These categories are discussed in this introduction, and are not repeated in the individual restoration alternative sections. The effects (adverse and/or beneficial), or lack thereof, are described according to duration (short-term or long-term) and intensity (minor or major). As this document is not action-specific, the potential impacts are discussed in general terms for a restoration site that may include the combination of propeller scars, blowholes, and berms. For restoration cases that present the possibility for unique or controversial environmental or socioeconomic impacts, additional project-specific analyses will be necessary.

4.1.1 Surrounding Land Use (All Restoration Alternatives)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.1.2 Climate (All Restoration Alternatives)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.1.3 Air Quality (All Restoration Alternatives)

Direct Effects: Short-term minor adverse effects are expected related to the use of motorized vessels to complete the restoration actions. Given the relatively short period of the restoration actions, the total emission amounts will create negligible impacts to local and regional air quality.

Indirect Effects: No indirect effects are expected.

4.1.4 Noise (All Restoration Alternatives)

Direct Effects: Short-term minor adverse effects are expected from motorized vessel traffic to the restoration site. Given the short time period of restoration implementation, negligible effects are anticipated.

Indirect Effects: No indirect effects are expected.

4.1.5 Cultural Resources (All Restoration Alternatives)

Direct Effects: Short and long-term adverse direct effects are possible if the disturbance of the sediment by the restoration actions advances deterioration of cultural resources. Restoration contractors under the supervision of NOAA and/or State personnel will be instructed to halt all activities if cultural resources are discovered until authorization to continue is granted by State and Federal cultural resource authorities.

Indirect Effects: No indirect effects are expected.

4.2 NO ACTION ALTERNATIVE

Under this alternative, no action would be taken at the grounding site, relying exclusively on the processes of natural recovery.

Pros: Since this option is non-intrusive, the existing regrowth, if present, will be left intact. This includes all the algae and seagrass growth that may have occurred since the time of the injury. In addition, the potential for further groundings associated with restoration equipment and vessels is avoided. The potential for adverse effects from sediment dispersion and turbidity in the adjacent intact seagrass areas are also avoided.

Cons: The no action alternative may result in natural recovery on a longer time scale or it may lead to further deterioration of the bank system. Without restoration, grounding scars may remain as a morphological feature distinct from the surrounding environment over a long time period. The potential instability of the site may also contribute to further sediment migration, decline in primary production, erosion, and impact to adjacent seagrass banks.

4.2.1 Location and Area Use (No Action Alternative)

Direct Effects: No direct effects are expected unless natural recovery fails to take place, in which case further deterioration of the area may occur, leaving surrounding areas vulnerable to erosion and decreasing the habitat and food source for a variety of organisms.

Indirect Effects: Long-term minor adverse effects are expected. Without restoration, the quality of the marine habitat in the FKNMS will be, in part, diminished, resulting in a possible reduction in commercial and recreational industries directly and indirectly dependent on a healthy marine ecosystem. Additionally, in many instances, without restoration, the grounding area has a higher probability of further degradation from severe storms.

4.2.2 Geology (No Action Alternative)

Direct Effects: Short and long-term adverse effects on adjacent undamaged habitats may occur as the original injury location may expand due to water current and storm related erosion.

Indirect Effects: No indirect effects are expected.

4.2.3 Water Resources (No Action Alternative)

Direct Effects: Long-term minor adverse effects are expected. Higher-than-normal turbidity levels may result from modified current flows, sediment dispersal, the absence of a secure seagrass root and rhizome system, and annual storm events.

Indirect Effects: Marine resources dependent on the high water clarity and quality sustained by healthy seagrass communities, such as coral reefs, may suffer.

4.2.4 Biological Resources (No Action Alternative)

Direct Effects: Long-term minor adverse effects are expected depending on the scale and severity of the injury. In a high-energy environment or after severe storm events, regrowth may be initiated and destroyed many times before stable colonization is established.

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No direct effects on endangered and threatened species are expected. The federally listed species of turtles and manatees are likely not to be permanent residents of the injured seagrass banks, but rather are known to occur in or travel through the area during seasonal migrations. Although they may feed while in the vicinity of the injured bank, they have no specific dependence on it. Because these species merely pass through the area and are not anticipated to depend exclusively on the injured seagrass bank for food or habitat, the adoption of the no action alternative is not expected to result in adverse effects on them, other than loss of a small segment of potential feeding area.

For fauna that is seagrass dependent for all or part of their life cycles, several direct adverse effects are expected. These include a partial loss of a food source and loss of substratum for epiphyte production for the numerous epiphytic grazing species. Also, cryptic fauna that use seagrass blades for cover, especially during their juvenile phase, will be, in part, adversely affected.

Indirect Effects: Long-term adverse indirect effects on the seagrass community are expected until the site has reached a recovery level similar to baseline conditions. The loss of habitat for seagrass-dwelling species will result in a reduction in the abundance and diversity of other species sheltering or feeding in the seagrass. The abundance of predatory fish that feed on seagrass-dependent organisms will be adversely impacted by the lost seagrass habitat. In addition, the expansion of berm sediment dispersal is expected during storms, thereby encroaching on and possibly damaging nearby communities.

Depending on the size of the injury, long-term adverse impacts are expected as a result of increased turbidity. Light levels may be decreased, which will affect surrounding photosynthetic biota such as corals, benthic algae, and phytoplankton. Additionally, increased turbidity levels may affect zooplankton by excluding them from areas of high turbidity.

Endangered and threatened species would likely experience no indirect effects.

4.2.5 Infrastructure (No Action Alternative)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.2.6 Hazardous and Toxic Substances (No Action Alternative)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.2.7 Socioeconomics (No Action Alternative)

Direct Effects: No major direct effects are expected.

Indirect Effects: Long-term minor adverse effects are expected as a result of the cumulative impact of seagrass habitat degradation. It is expected that over time, continued habitat degradation will impact the recreational and commercial tourism and fishing industries.

4.2.8 Quality of Life (No Action Alternative)

Direct Effects: Viewing injured seagrass beds is expected to slightly diminish the quality of the recreational experience enjoyed by residents and tourists.

Indirect Effects: Long-term minor adverse effects are expected as the cumulative impact of seagrass injuries will impact the viability of recreational and commercial activities dependent on healthy seagrass ecosystems.

4.3 SEAGRASS TRANSPLANT ALTERNATIVE

Under this alternative, seagrass colonizing stems are directly transplanted into the injured area to stabilize the sediment. Collection methods have been developed which minimize impact to donor beds of *H. wrightii* and *S. filiforme* and assure rapid recovery after plants have been removed (Fonseca et al. 1998). There is no evidence that any invasive or exotic species have occupied donor sites. This restoration technique helps advance the injury recovery process and the associated direct and indirect ecological and socioeconomic benefits.

Pros: Seagrass transplants are complementary to any site regrowth of seagrasses or algae. The potential for adverse effects from sediment dispersion and turbidity to the adjacent intact seagrass areas is also reduced as the seagrass transplants will facilitate substrate stability and expedited site recovery.

Cons: If not carefully monitored, collection of transplant source stock may degrade donor sites. To prevent this possibility, state and/or NOAA seagrass biologists will routinely monitor the impact of transplant source stock collection on donor sites.

4.3.1 Location and Area Use (Seagrass Transplants)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial indirect effects are expected. The transplanting of seagrass will facilitate conditions amenable for seagrass recruitment and the return of associated flora and fauna. This, in turn, is expected to support, in part, recreational and/or commercial activities that depend to some degree on healthy seagrass ecosystems.

4.3.2 Geology (Seagrass Transplants)

Direct Effects: Positive short and long-term direct impacts are anticipated, as seagrass transplants will help stabilize sediment in the injured area, thereby reducing the chance for additional site erosion.

Indirect Effects: No indirect effects are expected.

4.3.3 Water Resources (Seagrass Transplants)

Direct Effects: Short and long term beneficial direct effects are expected as seagrass transplants and subsequent healthy seagrass recovery over the injured area will reduce water turbidity.

Indirect Effects: Beneficial long term indirect effects are expected as decreased water turbidity provides clearer water, an environmental amenity that is enjoyed by visitors and residents of the Florida Keys.

4.3.4 Biological Resources (Seagrass Transplants)

Direct Effects: Short and long term beneficial direct effects are anticipated as seagrass transplants will facilitate a more rapid recovery of the injury site, thereby improving habitat for seagrass dependent flora and fauna. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects.

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Indirect Effects: Beneficial long-term benefits are anticipated as a recovery of the injured site represents, in part, an improvement in the overall health of the seagrass ecosystem and numerous biological resources that indirectly benefit. By decreasing turbidity, the restored seagrass indirectly benefits both autotrophic and heterotrophic benthic organisms in nearby communities, including those found on associated coral reefs. Endangered and threatened species would likely experience no indirect effects.

4.3.5 Infrastructure (Seagrass Transplants)

Direct Effects: Short-term minor adverse effects are expected as restoration activities will generate small increases in solid waste (refuse).

Indirect Effects: No indirect effects are expected.

4.3.6 Hazardous and Toxic Substances (Seagrass Transplants)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.3.7 Socioeconomics (Seagrass Transplants)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated as seagrass transplants will contribute toward overall recovery of the injured area and contribute, in part, toward the viability of recreational and commercial activities directly and indirectly dependent on healthy seagrass ecosystems.

4.3.8 Quality of Life (Seagrass Transplants)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.4 BIRD STAKE ALTERNATIVE

This alternative involves the placement of PVC bird roosting stakes in portions of the injured area. Bird stakes provide a platform for birds to roost, and, as a result, feces are deposited into the waters directly above the injury area, thereby fertilizing the re-colonizing seagrasses.

Pros: This alternative directly addresses the potential instability of the injured areas by facilitating a more rapid regrowth of seagrasses. During the time that bird stakes are present, they may serve as restoration site markers, thereby reducing the potential for additional accidental groundings. In addition, it is anticipated that with enough public education, passing boaters will recognize the bird stakes as an indication of an active restoration project, and by association, exercise greater caution when navigating in the area and in other shallow waters.

Cons: Depending on the location of the grounding site and the quantity of bird stakes required, aesthetic concerns may be an issue. The possibility for vandalism and additional groundings in the immediate area due to boats mistaking the bird stakes as water markers exist. The possibility also exists for navigational incidents with the bird

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stakes, however, this possibility is low as stakes are placed only in shallow water, typically removed from the primary channels. To address these concerns, the FKNMS and FDEP are continually engaged with the local community on seagrass restoration education programs. Additionally, research has demonstrated that, if left on site too long, bird stakes may cause a communal shift of seagrass species from *T. testudinum* to *H. wrightii* (Powell et al. 1989). Thus, bird stakes are removed after approximately 75% survival coalescence is reached, usually after 18 months.

4.4.1 Location and Area Uses (Bird Stakes)

Direct Effects: Depending on the length of time that bird stakes are required at the site, the areas immediately below and adjacent to the bird stakes are likely to be temporarily incompatible for the use of anglers or boaters. In most instances, the impact on boaters will be limited as grounding locations are in shallow waters that should not be regularly visited. The impact for anglers is limited to the duration that the bird stakes are positioned at the site.

Indirect Effects: Long-term minor beneficial indirect effects are expected as bird stakes will facilitate conditions amenable for seagrass recruitment and the return of associated fauna. It would be expected to hasten the return of recreational and/or commercial water based activities to the general area.

4.4.2 Geology (Bird Stakes)

Direct Effects: No adverse direct effects are expected. Long-term beneficial direct effects are anticipated as bird stakes will facilitate stabilization of the sediment in the injury area, thus, reducing the possibility of future site erosion.

Indirect Effects: No indirect effects are expected.

4.4.3 Water Resources (Bird Stakes)

Direct Effects: No direct effects on water quality or on the biological resources within the substrate that depend on high water quality have been detected in experiments or are anticipated in restoration actions.

Indirect Effects: No indirect effects are expected.

4.4.4 Biological Resources (Bird Stakes)

Direct Effects: Short and long term beneficial direct effects are anticipated for the seagrass communities. However, if left on site too long, bird stakes may cause a communal shift of seagrass species from *T. testudinum* to *H. wrightii* (Powell 1989). The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects.

Indirect Effects: Short and long term beneficial indirect effects are anticipated as the recovery of the site will benefit seagrass dependent flora and fauna. By decreasing turbidity, the restored seagrass indirectly benefits both autotrophic and heterotrophic benthic organisms in nearby communities, including those found on associated coral reefs. Endangered and threatened species would likely experience no indirect effects.

4.4.5 Infrastructure (Bird Stakes)

Direct Effects: Short-term minor adverse effects are expected as restoration activities will generate small increases in solid waste (refuse).

Indirect Effects: No indirect effects are expected.

4.4.6 Hazardous and Toxic Substances (Bird Stakes)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.4.7 Socioeconomics (Bird Stakes)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated as bird stakes will contribute toward overall recovery of the injured area and as such contribute, in part, toward the viability of recreational and commercial activities dependent on healthy seagrass ecosystems.

4.4.8 Quality of Life (Bird Stakes)

Direct Effects: Depending on the location of the restoration site and the scale of the project, the stakes may be viewed by some as an adverse aesthetic concern. For others, the stakes may improve quality of life as residents and visitors will take interest and satisfaction in seeing on-going seagrass restoration projects.

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.5 FERTILIZER SPIKE ALTERNATIVE

This alternative involves the placement of chemical fertilizer spikes (e.g. tree spikes) in portions of the injury to enhance recovery of transplanted or naturally re-colonizing seagrasses. One fertilizer spike will be placed next to each seagrass transplant. Nitrogen, phosphorous and potassium comprise the main chemical makeup of these spikes, which studies have not shown to negatively affect the surrounding area (Williams 1990).

Pros: This alternative directly addresses the potential instability of the injured area by facilitating a more rapid regrowth of seagrasses, both transplanted and from colonizing seagrasses. Fertilizer spikes provide a means to enhance the fertilization of an injured area when water depths are too great for bird stakes. Fertilizer is released steadily over a three to four month period, thereby providing a constant flow of nutrient enrichment. Unlike bird stakes, fertilizer spikes cannot be vandalized or potentially confused as water markers.

Cons: Depending on the site-specific sediment and water current conditions at the grounding site, the efficacy of the fertilizer spikes may be less than three to four months. This may require repeat visits to insert additional fertilizer spikes.

4.5.1 Location and Area Uses (Fertilizer Spikes)

Direct Effects: No direct effects are expected.

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Indirect Effects: Long-term minor beneficial indirect effects are expected. The insertion of fertilizer spikes will facilitate conditions amenable for seagrass recruitment and the return of associated flora and fauna. The restoration of this injured area contributes, in part, toward the viability of seagrass dependent recreational and commercial activities in the area.

4.5.2 Geology (Fertilizer Spikes)

Direct Effects: Beneficial effects are anticipated as fertilizer spikes will contribute toward recovery of seagrass in the injured area, and as such, stabilize the sediment, thereby reducing the possibility for additional site erosion.

Indirect Effects: No indirect effects are expected.

4.5.3 Water Resources (Fertilizer Spikes)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.5.4 Biological Resources (Fertilizer Spikes)

Direct Effects: Long-term direct beneficial effects are anticipated as fertilization of seagrass will expedite recovery of the area and positively impact other seagrass dependent flora and fauna. Additional spikes inserted throughout the year would increase this potential benefit. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects.

Indirect Effects: By decreasing turbidity, the restored seagrass indirectly benefits both autotrophic and heterotrophic benthic organisms in nearby communities, including those found on associated coral reefs. Endangered and threatened species would likely experience no indirect effects.

4.5.5 Infrastructure (Fertilizer Spikes)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.5.6 Hazardous and Toxic Substances (Fertilizer Spikes)

Direct Effects: No direct effects are expected as there are no hazardous or toxic substances associated with the chemical fertilizer in the spikes.

Indirect Effects: No indirect effects are expected.

4.5.7 Socioeconomics (Fertilizer Spikes)

Direct Effects: No direct effects are expected

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Indirect Effects: Long-term beneficial indirect effects are anticipated as fertilizer spikes will contribute toward overall recovery of the injured area and as such contribute, in part, toward the viability of recreational and commercial activities dependent on healthy seagrass ecosystems.

4.5.8 Quality of Life (Fertilizer Spikes)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated, as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.6 SEDIMENT FILL ALTERNATIVE

This alternative involves the placement of sediment fill in injury blowholes or deep propeller scars to stabilize the injury, thereby reducing the probability of continued site erosion and providing a suitable substrate for recolonization. In the event that sediment fill is identified as one of the preferred restoration alternatives, the transportation of materials by barge from an upland staging area to the grounding site will be necessary. NOAA and designated contractors will exercise extreme caution to minimize the risk of any additional seagrass injury during the course of restoration activities. This includes the use of temporary moorings and/or sediment turbidity screens while placing sediment fill in blowholes. Restoration contractors will be required to follow current best mooring guidelines as determined by NOAA. U.S. Route 1 is the only major roadway providing access from the south Florida mainland to the Keys. The roadway varies between two and four lanes. Sediment fill and other supplies, if not available locally, will be transported on U.S. Route 1, or brought to the site by barge from another area depending on the final construction plans.

Pros: This alternative directly addresses the potential instability of the injured areas by stabilizing the injury site, thereby facilitating conditions for a more rapid regrowth of seagrasses, and preventing further injury from erosion and other destabilizing forces. Through the filling of blowholes or other injury features, the site can be modified to a state that is more similar to pre-grounding conditions.

Cons: If care is not exercised, the possibility exists for additional grounding injuries from the sediment barge and other vessels used in the restoration process. In addition, for injury sites that have had partial re-colonization, the sediment fill will smother the new growth. However, given that an unrestored blowhole is physically unstable, it is highly likely that any new growth would be dislodged during a major storm event, as it would be exposed to the wind-driven waves from hurricanes (Whitfield *in press*).

4.6.1 Location and Area Uses (Sediment Fill)

Direct Effects: Depending on the context of the injury and design of the restoration plan, temporary short-term direct effects may occur in the form of the establishment of no-boating “exclusion zones”, marked by buoys, around large restoration sites. However, such an action would only be implemented in the rare case of an exceptionally large seagrass injury and instituted only during the few days in which restoration was taking place.

Indirect Effects: Long-term minor beneficial indirect effects are expected since the placement of fill will at least partially restore the site morphology, and thus make conditions amenable for seagrass recruitment and the return of associated flora and fauna. Recovery of the injury site will assist, in part, the continued viability of recreational and/or commercial activities dependent on healthy seagrass ecosystems.

4.6.2 Geology (Sediment Fill)

Direct Effects: Long-term minor beneficial effects on geology will occur as a result of filling injury features with sediment. A closer approximation to pre-grounding topography will help reestablish the pre-injury baseline conditions at the site.

Short-term minor adverse effects on geology may result from the disturbance of the substrate during filling activities if proper mooring and anchoring of work vessels and equipment is not maintained.

Indirect Effects: No indirect effects are expected.

4.6.3 Water Resources (Sediment Fill)

Direct Effects: Short-term minor adverse effects from increased turbidity generated during placement of sediment fill in the injured areas are expected. However, care will be taken to minimize these effects through the use of the most appropriate and cost effective technology (e.g. turbidity screens). Long-term benefits in improved water quality are expected once seagrass recolonize the injury area.

Indirect Effects: No indirect effects are expected.

4.6.4 Biological Resources (Sediment Fill)

Direct Effects: The placement of sediment fill will provide long-term benefits as the essential substrate for seagrasses that re-colonize the injury area. Re-colonization of the injury area by seagrasses will directly and indirectly benefit numerous species of flora and fauna. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species are not likely to experience direct effects. In the event the seagrass injury is located within an area with known resident populations of manatees, restoration activities will be completed following state manatee protection guidelines ensuring their protection and minimization of overall disturbance.

Indirect Effects: Long-term minor beneficial effects on nearby seagrass and benthic animal communities are expected. The restoration of the injured area with sediment fill will lessen the chances of the surrounding communities being adversely affected by the forces exerted by annual storms, although dispersion of unconsolidated sediment out of the grounding area is still a possibility early in the recovery process.

Fish communities will experience long-term minor beneficial effects. The eventual growth of benthic organisms, including algae, plus an increase in shelter habitat for juvenile fish, will provide additional food sources for fish living on or near the injured area, including the larger predatory species that roam seagrass banks in search of prey. No indirect effects on endangered and threatened species are expected.

4.6.5 Infrastructure (Sediment Fill)

Direct Effects: No effects are expected.

Indirect Effects: No effects are expected.

4.6.6 Hazardous and Toxic Substances (Sediment Fill)

Direct Effects: No adverse effects are expected. All efforts will be made to ensure the placement of sediment fill will not introduce significant new hazardous materials into the environment. Most construction materials would come from natural sources (e.g., limestone mined from inland quarries) and be inert. The contractor will be required to address contingencies through plans needed for the permitting process. These contingency plans will include incidental spillage of fuel.

Indirect Effects: No indirect effects are expected.

4.6.7 Socioeconomics (Sediment Fill)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial effects are expected to occur as sediment fill will improve the likelihood of a successful seagrass restoration project, and in part, an improvement in the seagrass ecology of the area. This, in turn, is positive for recreational and commercial activities that are directly and/or indirectly dependent on a healthy seagrass ecosystem.

4.6.8 Quality of Life (Sediment Fill)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This in turn helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.7 SEDIMENT TUBE ALTERNATIVE

This alternative involves the placement of biodegradable fabric mesh tubes filled with sediment, referred hereinafter as “sediment tubes”, in propeller scars or other injury features. The placement of sediment tubes helps stabilize the injury location, reduce the probability of continued site erosion, and enhance conditions for seagrass recovery. This restoration technique helps advance the injury recovery process, and by default, the associated direct and indirect ecological and socioeconomic benefits of a healthy seagrass ecosystem.

Pros: This alternative directly addresses restoration of the injured area by stabilizing the injury site, thereby facilitating a more rapid regrowth of transplanted or naturally re-colonizing seagrasses.

Cons: In the event of strong current or heavy storm activity the potential exists for the sediment tubes to be dislodged from the propeller scars, thereby negating any benefit. It is for this reason that securing the tubes with an anchoring pin and monitoring the stability of the tubes after a severe storm may be considered.

4.7.1 Location and Area Uses (Sediment Tubes)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial indirect effects are expected. Since the sediment tubes will partially restore the site morphology, conditions will improve for seagrass recruitment and the return of associated flora, fauna, and recreational and/or commercial water based activities in the area.

4.7.2 Geology (Sediment Tubes)

Direct Effects: Long-term minor beneficial effects are expected as the placement of sediment tubes in the injured area will more quickly return the topography of the site to pre-grounding conditions. Short-term minor adverse effects on the topography could result from the disturbance of the substrate during restoration activities if proper mooring of work vessels is not maintained.

Indirect Effects: No indirect effects are expected.

4.7.3 Water Resources (Sediment Tubes)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.7.4 Biological Resources (Sediment Tubes)

Direct Effects: The placement of sediment tubes will provide long-term direct benefits by providing a more suitable substratum for establishment of seagrasses. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects.

Indirect Effects: Long-term minor beneficial effects on nearby seagrass and benthic animal communities are expected. The restoration benefits associated with sediment tubes is likely to lessen the chances of the surrounding communities being adversely affected by increased site erosion caused by high water current or annual storms. The eventual growth of benthic organisms, including algae, plus an increase in shelter habitat for juvenile fish, will provide additional food sources for fish living on or near the bank, including the larger predatory species that roam bank margins in search of prey. No indirect effects on endangered and threatened species are expected.

4.7.5 Infrastructure (Sediment Tubes)

Direct Effects: Short-term minor adverse effects are expected as a result of increased mooring activity and transportation movement.

Indirect Effects: No effects are expected.

4.7.6 Hazardous and Toxic Substances (Sediment Tubes)

Direct Effects: No significant direct effects are expected. Restoration would not intentionally introduce significant new hazardous materials into the environment. The contractor will be required to address contingencies through plans needed for the permitting process. These would include incidental spillage of fuel.

Indirect Effects: No indirect effects are expected.

4.7.7 Socioeconomics (Sediment Tubes)

Direct Effects: No direct effects are expected.

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Indirect Effects: Long-term minor beneficial effects are expected. By placing sediment tubes in the appropriate areas of the injury site, a better substrate for the establishment of seagrasses is created. Thus, it would lead to a slightly quicker recovery of seagrass and, in part, support the recreational and commercial marine related activities in the region.

4.7.8 Quality of Life (Sediment Tubes)

Direct Effects: No direct effects are expected

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute in part toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.8 BERM REDISTRIBUTION ALTERNATIVE

When appropriate, the redistribution (through raking or water-hosing) of the dislodged sediment back into the blowhole or propscar injury is a low-cost and effective restoration alternative. This alternative is suitable for shallow blowholes or propscars where the displaced sediment has formed a berm around the injury and workers can easily access the site. This restoration technique expedites recovery of the injured sites, resulting in direct and indirect ecological and socioeconomic benefits associated with healthy seagrass ecosystems.

Pros: This alternative directly addresses the potential instability of the injured areas by stabilizing the injury site, thereby facilitating conditions for a more rapid regrowth of seagrasses. Through the filling of blowholes or other injury features, the site can be modified to a state that is more similar to the pre-grounding conditions. Redistribution is beneficial in two major respects. First, it will advance the stabilization of the injury area, facilitating conditions for recovery, and, second, it will advance recovery of the seagrass that was previously buried by the berm material. In addition, the manual raking of sediment back into the injury features avoids the problem of potential additional injury due to the use of barge vessels and other mechanized equipment.

Cons: The redistribution of sediment fill may result in considerable immediate short-term turbidity as the sediment mix filters through the water to the injury basin. In areas with high tidal currents, finer sediments will disperse in the water column, potentially impacting neighboring seagrasses. In addition, for injury sites that have had rapid partial re-colonization, the sediment fill will smother any new growth. However, in many injured sites, the regrowth that occurs prior to restoration may not be stable, and thus not truly classified as “recovery” (Kenworthy 1998). The act of raking or water hosing may also injure any seagrass still surviving underneath the berm.

4.8.1 Location and Area Uses (Berm Redistribution)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial indirect effects are expected since the redistribution of the berms will at least partially restore the site morphology, and thus conditions amenable for seagrass recruitment and the return of associated flora and fauna. Recovery of the injury site will assist, in part, the continued viability of recreational and/or commercial activities dependent on healthy seagrass ecosystems.

4.8.2 Geology (Berm Redistribution)

Direct Effects: Long-term minor beneficial effects on geology will occur as a result of raking the berms into the injury features. A closer approximation to pre-grounding topography will help reestablish the pre-injury baseline conditions at the site.

Indirect Effects: No indirect effects are expected.

4.8.3 Water Resources (Berm Redistribution)

Direct Effects: Short-term minor adverse effects from increased turbidity generated during redistribution of sediment into the injured areas are expected. However, care will be taken to minimize these effects through the use of the most appropriate and cost effective technology. Long-term benefits in improved water quality are expected once seagrass re-colonize the injury area.

Indirect Effects: No indirect effects are expected.

4.8.4 Biological Resources (Berm Redistribution)

Direct Effects: The redistribution of sediment back into the injury area will provide long-term benefits for the re-colonization of the area by seagrasses. Seagrass re-colonization will directly and indirectly benefit numerous species of flora and fauna. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects. In the event the seagrass injury is located within an area with known resident populations of manatees, restoration activities will be completed following state manatee protection guidelines ensuring their protection and minimization of overall disturbance.

Indirect Effects: Long-term minor beneficial effects on nearby seagrass and benthic animal communities are expected. The restoration of the injured area will lessen the chances of the surrounding communities being adversely affected by the forces exerted by annual storms, although dispersion of unconsolidated sediment out of the grounding area is still a possibility early in the recovery process.

Fish communities will experience long-term minor beneficial effects. The eventual growth of benthic organisms, including algae, plus an increase in shelter habitat for juvenile fish, will provide additional food sources for fish living on or near the injured area, including the larger predatory species that roam seagrass banks in search of prey. No indirect effects on endangered and threatened species are expected.

4.8.5 Infrastructure (Berm Redistribution)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.8.6 Hazardous and Toxic Substances (Berm Redistribution)

Direct Effects: No adverse effects are expected. The contractor will be required to address contingencies through plans needed for the permitting process. These contingency plans will include incidental spillage of fuel.

Indirect Effects: No indirect effects are expected.

4.8.7 Socioeconomics (Berm Redistribution)

Direct Effects: No direct effects are expected.

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Indirect Effects: Long-term minor beneficial effects are expected to occur as redistribution of fill will improve the likelihood of a successful seagrass restoration project, and, in part, an improvement in the seagrass ecology of the area. This in turn is positive for recreational and commercial activities that are directly and/or indirectly dependent on a healthy seagrass ecosystem.

4.8.8 Quality of Life (Berm Redistribution)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.9 SOD REPLACEMENT ALTERNATIVE

When appropriate, large chunks of seagrasses with intact rhizomes may be placed back into a shallow propscar injury or blowhole. This alternative is suitable for shallow blowholes or propscars where additional sediment fill is not needed for the replaced seagrass to continue to thrive once replaced. This restoration technique expedites recovery of the injured sites, resulting in direct and indirect ecological and socioeconomic benefits associated with healthy seagrass ecosystems.

Pros: This alternative directly addresses the potential instability of the injured areas by giving the replaced sod a chance to thrive and stabilizing the injury site, thereby facilitating conditions for a more rapid regrowth of seagrasses.

Cons: There are no cons associated with this alternative.

4.9.1 Location and Area Uses (Sod Replacement)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial indirect effects are expected since the replacement of sod will at least partially restore the site morphology, and thus conditions amenable for seagrass recruitment and the return of associated flora and fauna. Recovery of the injury site will assist, in part, the continued viability of recreational and/or commercial activities dependent on healthy seagrass ecosystems.

4.9.2 Geology (Sod Replacement)

Direct Effects: Long-term minor beneficial effects on geology will occur as a result of placing sod in the injury features. This will decrease the probability of continued erosion.

Indirect Effects: No indirect effects are expected.

4.9.3 Water Resources (Sod Replacement)

Direct Effects: No direct effects are expected.

Indirect Effects: Sod replacement provides a minor long-term benefit by facilitating the growth and survival of seagrass that works to enhance water clarity and stabilize substrate, thus improving water quality.

4.9.4 Biological Resources (Sod Replacement)

Direct Effects: The replacement of intact sod into the injury area will provide long-term benefits for the re-colonization of the area by seagrasses. Seagrass re-colonization will directly benefit numerous species of flora and fauna. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects.

Indirect Effects: Long-term minor beneficial effects on nearby seagrass and benthic animal communities are expected. The restoration of the injured area will lessen the chances of the surrounding communities being adversely affected by the forces exerted by annual storms.

Fish communities will experience long-term minor beneficial effects. The eventual growth of benthic organisms, including algae, plus an increase in shelter habitat for juvenile fish, will provide additional food sources for fish living on or near the injured area, including the larger predatory species that roam seagrass banks in search of prey. No indirect effects on endangered and threatened species are expected.

4.9.5 Infrastructure (Sod Replacement)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.9.6 Hazardous and Toxic Substances (Sod Replacement)

Direct Effects: No adverse effects are expected. The contractor will be required to address contingencies through plans needed for the permitting process. These contingency plans will include responses to incidental spillage of fuel.

Indirect Effects: No indirect effects are expected.

4.9.7 Socioeconomics (Sod Replacement)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial effects are expected to occur as sod replacement will improve the likelihood of successful seagrass regrowth. In turn, this is positive for recreational and commercial activities that are directly and/or indirectly dependent on a healthy seagrass ecosystem.

4.9.8 Quality of Life (Sod Replacement)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.10 WATER MARKER ALTERNATIVE

Throughout the Florida Keys, water markers are placed to assist mariners with navigating shallow water environments. In areas known to be high seagrass grounding locations, the use of additional water markers serves as an additional preventative restoration alternative. They can be used as a restoration action if it is possible to reasonably predict (and thus quantify the benefits/scale) the number, extent and severity of groundings that would be prevented with their use, and if installing the markers is not a task that an agency other than NOAA has been given appropriated funding to implement.

Pros: Prevention of seagrass injuries is always the best option. Over time, as patterns in seagrass groundings develop, it is anticipated that grounding incidents will decline with a more aggressive channel-marking program. The advantage of water markers are that they have the potential to prevent or minimize seagrass injuries over the working lifetime of the marker.

Cons: If water markers are used over aggressively, or if they are placed too close to the bank, they can become confusing for mariners, thus causing more degradation as boaters ground on the bank. Depending on the viewer, they may be considered a form of visual pollution.

4.10.1 Location and Area Uses (Water Markers)

Direct Effects: Water markers will restrict access to areas that may have previously been open to navigation, requiring the mariner to use alternate routes. The placement of markers will directly educate mariners about the risk of boat groundings in the shallow waters.

Direct effects are anticipated as water markers are likely to contribute toward a reduction in seagrass injuries as vessels stay out of shallow water environments.

Indirect Effects: It is anticipated that the markers will increase mariners' awareness of the risks of navigating in shallow water environments and lead to a reduction in grounding incidents throughout the Keys.

4.10.2 Geology (Water Markers)

Direct Effects: Long-term minor beneficial effects are expected as the placement of water markers may result in a reduction of grounding injuries.

Indirect Effects: No indirect effects are expected.

4.10.3 Water Resources (Water Markers)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.10.4 Biological Resources (Water Markers)

Direct Effects: The placement of water markers should result in beneficial direct effects for biological resources as the frequency of boat groundings should be reduced. This will eliminate the stresses vessel groundings place on fish and benthic organisms associated with seagrass degradation. No direct effects are expected for endangered or threatened species.

Indirect Effects: No indirect effects are expected.

4.10.5 Infrastructure (Water Markers)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.10.6 Hazardous and Toxic Substances (Water Markers)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.10.7 Socioeconomics (Water Markers)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial effects are expected. Reducing the number of seagrass injuries in the Keys will support, in part, the continued growth of recreational and commercial marine related activities in the region.

4.10.8 Quality of Life (Water Markers)

Direct Effects: Depending on the viewer, water markers may be seen as an obstacle and visual nuisance, or, alternatively, as a positive sign of responsible stewardship of coastal resources.

Indirect Effects: No indirect effects are expected.

4.11 EXCLUSION CAGE ALTERNATIVE

When injuries to seagrass beds occur near coral reefs, it is especially difficult for the seagrass to reestablish itself after restoration. A large variety of herbivores live in or frequent coral reefs and thus put abnormally high grazing pressure on nearby seagrass. Uninjured, well-established seagrass beds can sustain this pressure, but new transplants are quickly grazed to the point where they cannot sustain themselves because they are planted as smaller fragments or units, which are not as well integrated clonally as plants growing in an established meadow. However, research has shown that exclusion cages placed around new transplants for three to four months allow the beds to establish themselves to the point where they are sustainable after the cages are removed (Fonseca et. al 1994). Each exclusion cage must also be securely fastened to the substrate so that it does not become detached. This is particularly important in areas where cages are exposed to storm waves, ground swells and other high-energy events.

Pros: This alternative directly addresses the survivability of seagrass transplants near coral reefs by protecting them from grazing by herbivores inhabiting the reef.

Cons: The possibility for vandalism exists. The possibility also exists for navigational incidents with the exclusion cages; however, this possibility is low as they are typically placed on the benthos in shallow water near reefs, which should not be regularly visited. There is also the possibility that cages exposed to storm waves, ground swells and other high-energy events could become detached and float away. However, the cages are constructed and fastened to the substrate in such a way that this is unlikely.

4.11.1 Location and Area Uses (Exclusion Cages)

Direct Effects: In most instances, the impact on boaters will be limited as grounding locations are in shallow waters near coral reefs that should not be regularly visited.

Indirect Effects: Long-term minor beneficial indirect effects are expected, as exclusion cages will facilitate conditions amenable for seagrass recruitment and the return of associated fauna. It would be expected to hasten the return of recreational and/or commercial water based activities to the area.

4.11.2 Geology (Exclusion Cages)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term beneficial indirect effects are anticipated, as exclusion cages will facilitate seagrass growth and thus stabilization of the sediment in the injury area, thereby reducing the possibility of future site erosion.

4.11.3 Water Resources (Exclusion Cages)

Direct Effects: No direct effects on water quality or on the biological resources within the substrate that depend on high water quality are anticipated.

Indirect Effects: Exclusion cages facilitate the growth and survival of seagrass that enhances water clarity and stabilizes substrate, thus improving water quality.

4.11.4 Biological Resources (Exclusion Cages)

Direct Effects: Short and long term beneficial direct effects are anticipated for the seagrass communities. The construction of exclusion cages will provide long-term benefits for the re-colonization of the area by seagrasses. Seagrass re-colonization will directly benefit numerous species of flora and fauna. The food provision and nursery protection services the injured area provided to fish prior to injury will be more quickly restored. Additionally, seagrass transplants will permit the faster redevelopment of epiphytic and algal communities in the injured area. Endangered and threatened species would likely experience no direct effects.

Indirect Effects: Short and long term beneficial indirect effects are anticipated, as the recovery of the site will benefit seagrass dependent flora and fauna. By decreasing turbidity, the restored seagrass indirectly benefits both autotrophic and heterotrophic benthic organisms in nearby communities, including those found on associated coral reefs. Endangered and threatened species would likely experience no indirect effects.

4.11.5 Infrastructure (Exclusion Cages)

Direct Effects: Short-term minor adverse effects are expected as restoration activities will generate small increases in solid waste (refuse).

Indirect Effects: No indirect effects are expected.

4.11.6 Hazardous and Toxic Substances (Exclusion Cages)

Direct Effects: No direct effects are expected.

Indirect Effects: No indirect effects are expected.

4.11.7 Socioeconomics (Exclusion Cages)

Direct Effects: No direct effects are expected.

Indirect Effects: Long-term minor beneficial effects are expected. Reducing the number of seagrass injuries in the Keys will support, in part, the continued growth of recreational and commercial marine related activities in the region.

4.11.8 Quality of Life (Exclusion Cages)

Direct Effects: Depending on the viewer, water markers may be seen as an obstacle and visual nuisance, or, alternatively, as a positive sign of responsible stewardship of coastal resources.

Indirect Effects: Long-term beneficial indirect effects are anticipated as successful restoration of the injured area will contribute, in part, toward an overall healthy seagrass ecosystem. This, in turn, helps support the viability of commercial and recreational activities that are directly or indirectly dependent on seagrass ecosystems.

4.12 CUMULATIVE EFFECTS

Cumulative effects are those that result from the incremental effects of an action when considering past, present, and reasonably foreseeable near-term future actions, regardless of the agencies or parties involved. Cumulative effects can result from individually minor, but collectively significant factors taking place over time as they may relate to the entire region. The following sections summarize the potential cumulative effects for each action.

4.12.1 No Action Alternative

Several potential cumulative effects are associated with the no action alternative for seagrass restoration projects. No restoration action may lead to adverse effects on the immediate and surrounding areas. The original habitat (seagrass community) has been lost and therefore so have the functions associated with a seagrass ecosystem. Species diversity and composition in the immediate area have been lost and would not be replaced in the near future. Injured seagrass beds provide potential areas for the proliferation of unwanted species, such as filamentous and fleshy algae, which can then encroach on the surrounding seagrass meadows. Turbidity from loose sand and debris at the injured site may resuspend during storm activity, leading to potential adverse effects on surrounding seagrass communities and coral reefs. With the no action alternative, cumulatively, the aesthetic, recreational, and commercial value of the area may be reduced, resulting in a reduction in overall economic welfare. No action can also result in further degradation from future storm events.

4.12.2 Seagrass Transplant Alternative

The cumulative effect of seagrass transplants will be a more rapid return to pre-injury baseline environmental conditions. It is unlikely that the use of seagrass transplants alone will return the injured area to the pre-grounding topography of the area. Seagrass transplants will facilitate the re-establishment of seagrasses and stabilization of the surrounding injured substrate, thereby reducing the possibility for resuspension of sediment, additional site erosion, and collateral injury to neighboring seagrasses.

4.12.3 Bird Stake Alternative

The cumulative effect of birdstakes will be a more rapid return to pre-injury baseline environmental conditions. It is unlikely that the use of bird stakes alone will return the injured area to pre-grounding topography of the area. Bird stakes will facilitate the re-establishment of seagrasses and stabilization of the surrounding injured substrate, thereby reducing the possibility for resuspension of sediment, additional site erosion, and collateral injury to neighboring seagrasses. Inevitably, some birdstakes will be vandalized or broken during storms; as such, lost birdstakes will contribute, in part, toward the larger problem of marine debris.

4.12.4 Fertilizer Spike Alternative

The cumulative effect of fertilizer spikes will be a more rapid return to pre-injury baseline environmental conditions. It is unlikely that the use of fertilizer spikes alone will return the injured area to pre-grounding topography of the area. Fertilizer spikes will facilitate the re-establishment of seagrasses and stabilization of the surrounding injured substrate as new seagrass initiates recovery. The return of seagrass in the injured area will reduce the possibility for resuspension of sediment, additional site erosion, and collateral injury to neighboring seagrasses. The short and long-term impacts of fertilizer spikes are viewed as positive toward recovery of the injured area and no negative direct or indirect effects are anticipated on the substrate or dependent organisms.

4.12.5 Sediment Fill Alternative

The cumulative effect of sediment fill will be a more rapid return to pre-injury baseline environmental conditions. The combination of sediment fill and re-colonizing seagrass will stabilize the injury site, thereby reducing the possibility for resuspension of sediment, additional site erosion, and collateral injury to neighboring seagrasses.

4.12.6 Sediment Tube Alternative

The cumulative effect of sediment tubes will be a more rapid return to pre-injury baseline environmental conditions at injury sites. Sediment tubes will facilitate the ability of seagrasses in the undisturbed side populations to naturally re-colonize the area. The combination of sediment tubes and re-colonizing seagrass will stabilize the injury site, thereby reducing the possibility for resuspension of sediment, additional site erosion, and collateral injury to neighboring seagrasses. In the event that the tube's mesh fabric is dislodged, it will contribute, in part, toward the larger problem of marine debris until it biodegrades.

4.12.7 Berm Redistribution Alternative

The cumulative effects of berm raking will result in short and long term beneficial impacts to the seagrass communities of the FKNMS. The benefits of berm raking will lead to a more expedited recovery of the seagrass injury and the seagrass bottom that was previously covered by the displaced sediment. Healthy seagrass communities are an essential component of the economic vitality of the commercial and recreational fishing and tourism industries in the FKNMS.

4.12.8 Sod Replacement Alternative

The cumulative effects of sod replacement will result in short and long term beneficial impacts to the seagrass communities of the FKNMS. The benefits of sod replacement will lead to a reversal of some of the injury by recreating pre-injury conditions. It will also allow biologists to avoid taking transplants from

donor beds. Healthy seagrass communities are an essential component of the economic vitality of the commercial and recreational fishing and tourism industries in the FKNMS

4.12.9 Water Marking Alternative

It is anticipated that the cumulative impacts of a more active channel-marking program will be a reduction in the frequency and severity of seagrass injuries. This will result in improved overall health of the seagrass ecosystem and indirectly the vitality of recreational and commercial tourism and fishing industries that benefit from seagrass ecosystems.

4.12.10 Exclusion Cage Alternative

The cumulative effect of exclusion cages will be a more rapid return to pre-injury baseline environmental conditions. It is unlikely that the use of exclusion cages alone will return the injured area to pre-grounding topography of the area. Exclusion cages will facilitate the re-establishment of seagrasses and stabilization of the surrounding injured substrate, thereby reducing the possibility for resuspension of sediment, additional site erosion, and collateral injury to neighboring seagrasses. Some exclusion cages may be swept away by storms and other high-energy events; as such, lost exclusion cages will contribute, in part, toward the larger problem of marine debris.

4.13 MITIGATION MEASURES

During the proposed restoration, the following mitigative measures would be undertaken to minimize the potential long-term and short-term adverse effects that could result from restoration activities.

4.13.1 Geology

Ensuring that vessels and equipment do not damage the existing seagrass meadows surrounding an injury site will reduce the potential for adverse effects. Work within the site area during darkness or periods of reduced visibility will not occur, and a foul weather and hurricane evacuation contingency plan will be developed to remove vessels from the area if changes in weather or sea-state conditions warrant.

4.13.2 Water Resources

Contractors will be required to comply with all applicable federal, state, and local regulations governing environmental pollution control and abatement. Turbidity controls and monitoring will take place during construction as appropriate and required.

4.13.3 Biological Resources

Contractors will employ all possible actions and strategies to minimize the impact of restoration actions on fish and wildlife. This includes instructing personnel on the proper procedures for conducting work in this type of habitat. Specifically, personnel should prevent any blockage to the movement of manatees or sea turtles in the environment; operate vessels at “no wake” speeds when in shallow waters; and temporarily delay work when manatees or sea turtles move within sight of the injury area. If the injury area is located in an area known to be an active mating, nesting, or nursery area for endangered species such as sea turtles or manatees, all actions must comply with state guidelines for manatee and sea turtle protection. Additionally, contractors will be required to comply with all applicable federal, state, and local regulations governing the protection of natural resources.

4.13.4 Infrastructure

Close coordination with Trustee personnel will be required with respect to the mooring of restoration-related vessels to avoid collateral injury to the seagrasses surrounding the injury area. Buoyant mooring lines will be used to keep the lines from striking the bottom during loading from wave action. Substantial anchors, placed off the seagrass beds in sand areas, may be necessary to resist wave-induced mooring loads. Adequate, approved disposal options will be made available for solid waste, with an emphasis on off-site/upland disposal. Additionally, there is potential for further injury to the seagrass meadows and the benthic environment from the movement of the sediment-carrying barges under the influence of swells. A storm-anchorage contingency plan will be established off-site if weather during the restoration forces the barges to move and take shelter. Supply vessels ferrying personnel and supplies to and from the restoration site create an increased potential for shallow bank strikes. Support vessels will use appropriate navigation and mooring techniques to reduce the possibility of additional injury to natural resources.

4.13.5 Cultural Resources

Should any cultural resources be discovered during restoration, work will be halted until appropriate State and Federal historic preservation officers are notified and authorization is granted to proceed with the restoration project.

4.13.6 Hazardous and Toxic Substances

Small petroleum, oil, or lubricant (POL) leaks may occur during restoration operations. Under normal conditions, these leaks or spills should be of insufficient volume to affect the sensitive habitat comprising the seagrass meadows and will likely evaporate or be washed away from the area. Only if a larger POL spill were to occur could there be a measurable impact on local communities. The likelihood of this type of spill is small overall due to the proper maintenance of restoration equipment. Additionally, the expected short duration of the immediate restoration activities would help to minimize the potential for a large release. Contractors will be required to comply with all applicable federal, state, and local regulations governing environmental pollution control and abatement.

4.14 CONCLUSIONS

The proposed actions to restore seagrass injuries in the FKNMS have been analyzed by comparing the environmental and socioeconomic effects associated with the range of potential restoration alternatives that include no action, bird stakes, fertilizer spikes, seagrass transplants, sediment fill, and sediment tubes. As a reminder, these seagrass restoration actions are those that will be used most frequently for primary and compensatory restoration. In addition, depending on the specific characteristics of the injury, restoration actions not detailed in this document may be implemented. Baseline environmental and socioeconomic conditions for areas subject to potential seagrass injuries in the FKNMS and the region of influence have been described, and the environmental and socioeconomic consequences of implementing the proposed actions evaluated. The analysis shows that, unless noted in a separate document, the environmental and socioeconomic conditions at the grounding sites will not be significantly affected in a negative way by proceeding with any of the restoration alternatives discussed.

CHAPTER 5. IMPLEMENTATION OF THE REGIONAL RESTORATION PLAN

NOAA's National Marine Sanctuary Program and Florida's Department of Environmental Protection (on behalf of the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida) are the lead Trustees responsible for the completion of natural resource injury and damage assessment claims. As part of a natural resource damage assessment (NRDA) claim, in addition to primary restoration, funds are collected to implement compensatory restoration actions to compensate the public for lost interim ecological resources from the time of initial injury until full recovery of the injured site. The basis for determining the appropriate scale of compensatory seagrass restoration is derived from biological and economic models that estimate the amount of seagrass services lost and time to full recovery (Fonseca et al. 2000). In order to maximize the restoration impact, compensatory funds collected from small seagrass NRDA cases will be pooled together to allow the implementation of larger seagrass restoration projects. The specific locations and required restoration actions for those sites will be detailed in a regional restoration plan document that is currently being developed. Funds may also be used for the implementation of seagrass injury prevention projects such as water markers. All compensatory restoration projects will focus on seagrass restoration and injury prevention projects within the FKNMS. Given that seagrass injuries have fairly uniform characteristics, the restoration alternatives described in this document will be the majority of actions implemented for the regional restoration plan. The most recent version of this plan can be found in appendix B. However, this is subject to change, as specific compensatory sites are identified.

CHAPTER 6. RELATIONSHIP TO OTHER LAWS AND PROGRAMS

The implementation of the restoration alternatives require the Trustees to obtain proper work permits, comply with the provisions of federal and state regulations, and notify appropriate organizations before conducting any restoration activity. This PEIS serves as the primary document to communicate to the public the proposed criteria for restoration consideration, restoration alternatives, and anticipated restoration impacts.

6.1 National Environmental Policy Act of 1969 (Public Law 91-190)

This document has been prepared in accordance with NEPA requirements. The purpose of this document is to assist in determining whether the proposed federal actions will have significant impacts on the quality of the human environment. Relevant sections of NEPA are provided in Appendix A.

6.2 National Marine Sanctuaries Act (16 U.S.C. Sec. 1431 et seq., as amended)

As required by the National Marine Sanctuaries Act (NMSA) (also known as Title III of the Marine Protection, Research, and Sanctuaries Act of 1972), NOAA will expend settlement monies toward restoration of the injured sites and on seagrass injury prevention actions. The restoration alternatives and injury prevention actions proposed in this PEIS represent the preferred alternatives identified by the Trustees. Under Section 312, the NMSA stipulates that recovered amounts, in excess of those required to be expended for response costs and damage assessments, must be used, in order of priority, to restore, replace, or acquire the equivalent of the sanctuary resources where the subject resources are located and to manage and improve any other national marine sanctuary. Amounts recovered for injuries to sanctuary resources lying within the jurisdiction of the State of Florida must be used in accordance with the Agreement for the Coordination of Civil Claims between NOAA and the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida. The NMSA and the Civil Claims Agreement can be found in Appendix B.

6.3 Florida Keys National Marine Sanctuary and Protection Act (Public Law 101-605)

The Florida Keys Marine Sanctuary and Protection Act requires that NOAA coordinate with the appropriate federal, state, and local governmental agencies and entities to support implementation of the sanctuary management plan. The proposed action analyzed in this document will occur within the boundaries of the FKNMS, and therefore NOAA will ensure that all activities comply with the sanctuary management plan. Relevant sections of the act are provided in Appendix C.

6.4 Clean Water Act (33 U.S.C. Sec. 1251 et seq.)

When restoration is in state waters and requires sediment fill, NOAA will submit a Joint Application for Works in the Waters of Florida to federal and state authorities to obtain permission under the Army Corps of Engineers Nationwide Permit 32. Section 404 of the Clean Water Act can be found in Appendix A. Relevant sections of the act are provided in Appendix D.

6.5 Coastal Zone Management Consistency (16 U.S.C. Sec. 1451 et seq.)

When restoration actions may affect the State of Florida coastal zone, NOAA will obtain consistency certification under the Coastal Zone Management Act (CZMA). Consistency certification will be obtained through federal consistency review of this document and through a State Environmental Resource Permit (ERP) review. ERP review, which includes Florida Coastal Management Program agency review and approval of the Clean Water Act water quality certification, may constitute a consistency determination by the State of Florida. Relevant sections of the CZMA can be found in Appendix E.

6.6 Endangered Species Act (16 U.S.C. §§ 1531-1543)

Consultation will be conducted pursuant to Section 7 of the Endangered Species Act to determine whether the proposed project will adversely affect listed species. All rules and penalties governing this act will apply. Section 7 is provided in Appendix F.

6.7 Magnuson-Stevens Fishery Conservation and Management Act (Public Law 94-265, as amended)

The Magnuson-Stevens Act requires that the regional Fishery Management Councils identify essential fish habitat (EFH). Once designated, the Act requires all federal agencies to consult with the National Marine Fisheries Service (now NOAA Fisheries) when any activity proposed to be permitted, funded, or undertaken may have adverse effects on EFH. Consultation is not required if the federal agency determines that adverse impacts to EFH will not occur. Restoration activities that result in the conversion of habitat from one type to another type, when both types are designated as EFH, will result in a permanent adverse impact on the original EFH type. Consultation would be necessary for such restoration actions.

The seagrass restoration program described in this document is designed to restore seagrass EFH in those areas that supported seagrass EFH prior to grounding-associated injuries. Therefore, there will be no conversion from one EFH habitat type to another type; simply a replacement of what once was present. In addition, as described in Chapters 3 and 4, it is anticipated that the restoration techniques to be employed will not result in any adverse impacts to other EFH types. Therefore, EFH assessments and consultation with NOAA Fisheries will not be required for most program activities. If, however, the program determines that site-specific restoration recommendations may endanger other EFH types, consultation will occur in accordance with the Act. If consultation is required, individuals from the federal National Marine Sanctuaries Office will initiate discussions with NOAA Fisheries. Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act is provided in Appendix G.

6.7 Florida Department of Environmental Protection, Bureau of Invasive Plant Management

Under Chapter 369, Florida Statutes, the harvest and transport of aquatic plants from state sovereign submerged lands are prohibited unless a permit is granted. When restoration actions require the collection and transplantation of seagrasses, an aquatic plant collection permit will be obtained.

6.8 Florida Department of Environmental Protection, Bureau of Submerged Lands and Environmental Resources

Under state law, Florida has jurisdiction over dredge and fill operations in or connected to waters of the state. In addition to water quality certification, an environmental resource permit will provide approval for activities conducted on state sovereign submerged lands.

6.9 Florida Department of State, Division of Historical Resources

The Division of Historical Resources' State Historic Preservation Officer (SHPO) will be contacted to confirm the presence or absence of known archaeological or historical sites.

6.10 Monroe and Dade County Department of Environmental Resource Management

Permits for restoration actions within the jurisdiction of Monroe County, FL will be secured. If lime rock for the restoration is taken from Dade County, NOAA will consult with the Dade County Department of Environmental Resource Management regarding environmental requirements.

6.11 United States Coast Guard

NOAA will notify the Coast Guard concerning the nature and timing of restoration activities so that the Coast Guard can issue a notice to mariners.

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APPENDIX A. THE NATIONAL ENVIRONMENTAL POLICY ACT

The National Environmental Policy Act of 1969, as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982):

An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969."

Purpose

Sec. 2 [42 USC § 4321].

The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

CONGRESSIONAL DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101 [42 USC § 4331].

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may --

fulfill the responsibilities of each generation as Trustee of the environment for succeeding generations;

assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;

attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;

preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;

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achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and

enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102 [42 USC § 4332].

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall --

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

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- (iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and
- (iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103 [42 USC § 4333].

All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104 [42 USC § 4334].

Nothing in section 102 [42 USC § 4332] or 103 [42 USC § 4333] shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105 [42 USC § 4335].

The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

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Sec. 201 [42 USC § 4341].

The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202 [42 USC § 4342].

There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203 [42 USC § 4343].

(a) The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

(b) Notwithstanding section 1342 of Title 31, the Council may accept and employ voluntary and uncompensated services in furtherance of the purposes of the Council.

Sec. 204 [42 USC § 4344].

It shall be the duty and function of the Council --

to assist and advise the President in the preparation of the Environmental Quality Report required by section 201 [42 USC § 4341] of this title;

to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

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to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

to report at least once each year to the President on the state and condition of the environment; and

to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205 [42 USC § 4345].

In exercising its powers, functions, and duties under this Act, the Council shall --

consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order No. 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and

utilize, to the fullest extent possible, the services, facilities and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206 [42 USC § 4346].

Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates [5 USC § 5313]. The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates [5 USC § 5315].

Sec. 207 [42 USC § 4346a].

The Council may accept reimbursements from any private nonprofit organization or from any department, agency, or instrumentality of the Federal Government, any State, or local government, for the reasonable travel expenses incurred by an officer or employee of the Council in connection with his attendance at any conference, seminar, or similar meeting conducted for the benefit of the Council.

Sec. 208 [42 USC § 4346b].

The Council may make expenditures in support of its international activities, including expenditures for: (1) international travel; (2) activities in implementation of international agreements; and (3) the support of international exchange programs in the United States and in foreign countries.

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Sec. 209 [42 USC § 4347].

There are authorized to be appropriated to carry out the provisions of this chapter not to exceed \$300,000 for fiscal year 1970, \$700,000 for fiscal year 1971, and \$1,000,000 for each fiscal year thereafter.

The Environmental Quality Improvement Act, as amended (Pub. L. No. 91- 224, Title II, April 3, 1970; Pub. L. No. 97-258, September 13, 1982; and Pub. L. No. 98-581, October 30, 1984.

42 USC § 4372.

(a) There is established in the Executive Office of the President an office to be known as the Office of Environmental Quality (hereafter in this chapter referred to as the "Office"). The Chairman of the Council on Environmental Quality established by Public Law 91-190 shall be the Director of the Office. There shall be in the Office a Deputy Director who shall be appointed by the President, by and with the advice and consent of the Senate.

(b) The compensation of the Deputy Director shall be fixed by the President at a rate not in excess of the annual rate of compensation payable to the Deputy Director of the Office of Management and Budget.

(c) The Director is authorized to employ such officers and employees (including experts and consultants) as may be necessary to enable the Office to carry out its functions ;under this chapter and Public Law 91-190, except that he may employ no more than ten specialists and other experts without regard to the provisions of Title 5, governing appointments in the competitive service, and pay such specialists and experts without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, but no such specialist or expert shall be paid at a rate in excess of the maximum rate for GS-18 of the General Schedule under section 5332 of Title 5.

(d) In carrying out his functions the Director shall assist and advise the President on policies and programs of the Federal Government affecting environmental quality by --

providing the professional and administrative staff and support for the Council on Environmental Quality established by Public Law 91- 190;

assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality;

reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources;

promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encouraging the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man;

assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality;

assisting the Federal departments and agencies in the development and interrelationship of environmental quality criteria and standards established throughout the Federal Government;

collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation.

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(e) The Director is authorized to contract with public or private agencies, institutions, and organizations and with individuals without regard to section 3324(a) and (b) of Title 31 and section 5 of Title 41 in carrying out his functions.

42 USC § 4373. Each Environmental Quality Report required by Public Law 91-190 shall, upon transmittal to Congress, be referred to each standing committee having jurisdiction over any part of the subject matter of the Report.

42 USC § 4374. There are hereby authorized to be appropriated for the operations of the Office of Environmental Quality and the Council on Environmental Quality not to exceed the following sums for the following fiscal years which sums are in addition to those contained in Public Law 91- 190:

- (a) \$2,126,000 for the fiscal year ending September 30, 1979.
- (b) \$3,000,000 for the fiscal years ending September 30, 1980, and September 30, 1981.
- (c) \$44,000 for the fiscal years ending September 30, 1982, 1983, and 1984.
- (d) \$480,000 for each of the fiscal years ending September 30, 1985 and 1986.

42 USC § 4375.

(a) There is established an Office of Environmental Quality Management Fund (hereinafter referred to as the "Fund") to receive advance payments from other agencies or accounts that may be used solely to finance --study contracts that are jointly sponsored by the Office and one or more other Federal agencies; and Federal interagency environmental projects (including task forces) in which the Office participates.

(b) Any study contract or project that is to be financed under subsection (a) of this section may be initiated only with the approval of the Director.

(c) The Director shall promulgate regulations setting forth policies and procedures for operation of the Fund.

APPENDIX B. THE NATIONAL MARINE SANCTUARIES ACT

16 U.S.C. 1431 ET. SEQ., as amended by Public Law 106-

Sec. 301. FINDINGS, PURPOSES, AND POLICIES; ESTABLISHMENT OF SYSTEM.

(a) FINDINGS.--The Congress finds that--

(1) this Nation historically has recognized the importance of protecting special areas of its public domain, but these efforts have been directed almost exclusively to land areas above the high-water mark;

(2) certain areas of the marine environment possess conservation, recreational, ecological, historical, research, educational, or esthetic scientific, educational, cultural, archeological, or esthetic qualities which give them special national, and in some instances, international, significance;

(3) while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive approach to the conservation and management of special areas of the marine environment; and

(4) a Federal program, which identifies special areas of the marine environment, will contribute positively to marine resources conservation, research, and management;

(5) such a Federal program will also serve to enhance public awareness, understanding, appreciation, and wise use of the marine environment; and

(6) protection of these special areas can contribute to maintaining a natural assemblage of living resources for future generations.

(4) a Federal program which establishes areas of the marine environment which have special conservation, recreational, ecological, historical, cultural, archeological, scientific, educational, or esthetic qualities as national marine sanctuaries managed as the National Marine Sanctuary System will-

(A) improve the conservation, understanding, management, and wise and sustainable use of marine resources;

(B) enhance public awareness, understanding, and appreciation of the marine environment; and

(C) maintain for future generations the habitat, and ecological services, of the natural assemblage of living resources that inhabit these areas.

(b) PURPOSES AND POLICIES.--The purposes and policies of this title are--

(1) to identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance and to manage these areas as the National Marine Sanctuary System;

(2) to provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner which complements existing regulatory authorities;

(3) to support, promote, and coordinate scientific research on, and monitoring of, the resources of these marine areas, especially long-term monitoring and research of these areas;

(4) to enhance public awareness, understanding, appreciation, and wise use of the marine environment;

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(3) to maintain the natural biological communities in the national marine sanctuaries, and to protect, and, where appropriate, restore and enhance natural habitats, populations, and ecological processes;

(4) to enhance public awareness, understanding, appreciation, and wise and sustainable use of the marine environment, and the natural, historical, cultural, and archeological resources of the National Marine Sanctuary System;

(5) to support, promote, and coordinate scientific research on, and long-term monitoring of, the resources of these marine areas;

(5) (6) to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;

(6) (7) to develop and implement coordinated plans for the protection and management of these areas with appropriate Federal agencies, State and local governments, Native American tribes and organizations, international organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas;

(7) (8) to create models of, and incentives for, ways to conserve and manage these areas, including the application of innovative management techniques; and

(8) (9) to cooperate with global programs encouraging conservation of marine resources; and.

(9) to maintain, restore, and enhance living resources by providing places for species that depend upon these marine areas to survive and propagate.

(c) ESTABLISHMENT OF SYSTEM.-There is established the National Marine Sanctuary System, which shall consist of national marine sanctuaries designated by the Secretary in accordance with this title.

Sec. 302. DEFINITIONS

As used in this title, the term--

(1) "Draft management plan" means the plan described in section 304(a)(1)(C)(v);

(2) "Magnuson-Stevens Act" means the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. 1801 et seq.);

(3) "marine environment" means those areas of coastal and ocean waters, the Great Lakes and their connecting waters, and submerged lands over which the United States exercises jurisdiction, including the exclusive economic zone, consistent with international law;

(4) "Secretary" means the Secretary of Commerce;

(5) "State" means each of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Commonwealth of the Northern Mariana Islands, American Samoa, the Virgin Islands, Guam, and any other commonwealth, territory, or possession of the United States;

(6) "damages" includes--

(A) compensation for--

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(i)(I) the cost of replacing, restoring, or acquiring the equivalent of a sanctuary resource; and (II) the value of the lost use of a sanctuary resource pending its restoration or replacement or the acquisition of an equivalent sanctuary resource; or

(ii) the value of a sanctuary resource if the sanctuary resource cannot be restored or replaced or if the equivalent of such resource cannot be acquired;

(B) the cost of damage assessments under section 312(b)(2); and

(C) the reasonable cost of monitoring appropriate to the injured, restored, or replaced resources;

(D) the cost of curation and conservation of archeological, historical, and cultural sanctuary resources; and

(E) the cost of enforcement actions undertaken by the Secretary in response to the destruction or loss of, or injury to, a sanctuary resource;

(7) "response costs" means the costs of actions taken or authorized by the Secretary to minimize destruction or loss of, or injury to, sanctuary resources, or to minimize the imminent risks of such destruction, loss, or injury, including costs related to seizure forfeiture, storage, or disposal arising from liability under section 312;

(8) "sanctuary resource" means any living or nonliving resource of a national marine sanctuary that contributes to the conservation, recreational, ecological, historical, research, educational, cultural, archeological, scientific, or aesthetic value of the sanctuary; and

(9) "exclusive economic zone" means the exclusive economic zone as defined in the Magnuson-Stevens Fishery and Conservation Act. and;

(10) 'System' means the National Marine Sanctuary System established by section 301.

Sec. 303. SANCTUARY DESIGNATION STANDARDS

(a) STANDARDS.--The Secretary may designate any discrete area of the marine environment as a national marine sanctuary and promulgate regulations implementing the designation if the Secretary--

(1) determines that- the designation will fulfill the purposes and policies of this title; and

(A) the designation will fulfill the purposes and policies of this title;

B.the area is of special national significance due to-

(i) its conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or esthetic qualities;

(ii) the communities of living marine resources it harbors; or

(iii) its resource or human-use values;

(C) existing State and Federal authorities are inadequate or should be supplemented to ensure coordinated and comprehensive conservation and management of the area, including resource protection, scientific research, and public education;

(D) designation of the area as a national marine sanctuary will facilitate the objectives in subparagraph (C); and

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(E) the area is of a size and nature that will permit comprehensive and coordinated conservation and management; and

(2) finds that--

(A) the area is of special national significance due to its resource or human-use values;

(B) existing State and Federal authorities are inadequate or should be supplemented to ensure coordinated and comprehensive conservation and management of the area, including resource protection, scientific research, and public education;

AND CONSULTATIONS REQUIRED IN MAKING DETERMINATIONS AND FINDINGS.--

(1) Factors.--For purposes of determining if an area of the marine environment meets the standards set forth in subsection (a), the Secretary shall consider--

(A) the area's natural resource and ecological qualities, including its contribution to biological productivity, maintenance of ecosystem structure, maintenance of ecologically or commercially important or threatened species or species assemblages, maintenance of critical habitat of endangered species, and the biogeographic representation of the site;

(B) the area's historical, cultural, archaeological, or paleontological significance;

(C) the present and potential uses of the area that depend on maintenance of the area's resources, including commercial and recreational fishing, subsistence uses other commercial and recreational activities, and research and education;

(D) the present and potential activities that may adversely affect the factors identified in subparagraphs (A), (B), (C);

(E) the existing State and Federal regulatory and management authorities applicable to the area and the adequacy of those authorities to fulfill the purposes and policies of this title;

(F) the manageability of the area, including such factors as its size, its ability to be identified as a discrete ecological unit with definable boundaries, its accessibility, and its suitability for monitoring and enforcement activities;

(G) the public b

(C) designation of the area as a national marine sanctuary will facilitate the objectives in subparagraph (B); and

(D) the area is of a size and nature that will permit comprehensive and coordinated conservation and management.

(b) FACTORS enefits to be derived from sanctuary status, with emphasis on the benefits of long-term protection of nationally significant resources, vital habitats, and resources that generate tourism;

(H) the negative impacts produced by management restrictions on income-generating activities such as living and nonliving resources development; and

(I) the socioeconomic effects of sanctuary designation. ;

(J) the area's scientific value and value for monitoring the resources and natural processes that occur there;

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(K) the feasibility, where appropriate, of employing innovative management approaches to protect sanctuary resources or to manage compatible uses; and

(L) the value of the area as an addition to the System.

(2) Consultation.--In making determinations and findings, the Secretary shall consult with--

(A) the Committee on Merchant Marine and Fisheries Resources of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate;

(B) the Secretaries of State, Defense, Transportation, and the Interior, the Administrator, and the heads of other interested Federal agencies;

(C) the responsible officials or relevant agency heads of the appropriate State and local government entities, including coastal zone management agencies, that will or are likely to be affected by the establishment of the area as a national marine sanctuary;

(D) the appropriate officials of any Regional Fishery Management Council established by section 302 of the Magnuson-Stevens Act (16 U.S.C. 1852) that may be affected by the proposed designation; and

(E) other interested persons.

(3) Resource Assessment Report.--In making determinations and findings, the Secretary shall draft, as part of the environmental impact statement referred to in section 304(a)(2), a resource assessment report documenting present and potential uses of the area, including commercial and recreational fishing, research and education, minerals and energy development, subsistence uses, and other commercial governmental, or recreational uses. The Secretary, in consultation with the Secretary of the Interior, shall draft a resource assessment section for the report regarding any commercial, governmental, or recreational resource uses in the area under consideration that are subject to the primary jurisdiction of the Department of the Interior. The Secretary, in consultation with the Secretary of Defense, the Secretary of Energy, and the Administrator, shall draft a resource assessment section for the report including information on any past, present or proposed future disposal or discharge of materials in the vicinity of the proposed sanctuary. Public disclosure by the Secretary of such information shall be consistent with national security regulations.

Sec. 304. PROCEDURES FOR DESIGNATION AND IMPLEMENTATION

(a) SANCTUARY PROPOSAL.--

(1) Notice.--In proposing to designate a national marine sanctuary, the Secretary shall--

(A) issue, in the Federal Register, a notice of the proposal, proposed regulations that may be necessary and reasonable to implement the proposal, and a summary of the draft management plan;

(B) provide notice of the proposal in newspapers of general circulation or electronic media in the communities that may be affected by the proposal; and

(C) on the same day the notice required by subparagraph (A) is issued, the Secretary shall submit to the Committee on Merchant Marine and Fisheries of the House of Representatives and the Committee on Commerce, Science and Transportation of the Senate documents, including an executive summary, consisting of--

(i) the terms of the proposed designation;

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- (ii) the basis of the findings made under section 303(a) with respect to the area;
 - (iii) an assessment of the considerations under section 303(b)(1);
 - (iv) proposed mechanisms to coordinate existing regulatory and management authorities within the area;
 - (v) the draft management plan detailing the proposed goals and objectives, management responsibilities, resource studies, interpretive and educational programs, and enforcement, including surveillance activities for the area;
 - (vi) an estimate of the annual cost of the proposed designation, including costs of personnel, equipment and facilities, enforcement, research, and public education;
 - (vii) the draft environmental impact statement;
 - (viii) an evaluation of the advantages of cooperative State and Federal management if all or part of a proposed marine sanctuary is within the territorial limits of any State or is superjacent to the subsoil and seabed within the seaward boundary of a State, as that boundary is established under the Submerged Lands Act (43 U.S.C. 1301 et seq.); and
 - (ix) the proposed regulations referred to in subparagraph (A).
- (C) no later than the day on which the notice required under subparagraph (A) is submitted to Office of the Federal Register, the Secretary shall submit a copy of that notice and the draft sanctuary designation documents prepared pursuant to section 304(a)(2), including an executive summary, to the Committee on Resources of the House of Representatives, the Committee on Commerce, Science, and Transportation of the Senate, and the Governor of each State in which any part of the proposed sanctuary would be located.
- (2) Environmental Impact Statement.--The Secretary shall--
- (A) prepare a draft environmental impact statement, as provided by the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), on the proposal that includes the resource assessment report required under section 303(b)(3), maps depicting the boundaries of the proposed designated area, and the existing and potential uses and resources of the area; and
 - (B) make copies of the draft environmental impact statement available to the public.
- (2) Sanctuary Designation Documents.- The Secretary shall prepare and make available to the public sanctuary designation documents on the proposal that include the following:
- (A) A draft environmental impact statement pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.).
 - (B) A resource assessment that documents--
 - (i) present and potential uses of the area, including commercial and recreational fishing, research and education, minerals and energy development, subsistence uses, and other commercial, governmental, or recreational uses;
 - (ii) after consultation with the Secretary of the Interior, any commercial, governmental, or recreational resource uses in the areas that are subject to the primary jurisdiction of the Department of the Interior; and
 - (iii) information prepared in consultation with the Secretary of Defense, the Secretary of Energy, and the

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Administrator of the Environmental Protection Agency, on any past, present, or proposed future disposal or discharge of materials in the vicinity of the proposed sanctuary.

Public disclosure by the Secretary of such information shall be consistent with national security regulations.

(C) A draft management plan for the proposed national marine sanctuary that includes the following:

(i) The terms of the proposed designation.

(ii) Proposed mechanisms to coordinate existing regulatory and management authorities within the area.

(iii) The proposed goals and objectives, management responsibilities, resource studies, and appropriate strategies for managing sanctuary resources of the proposed sanctuary, including interpretation and education, innovative management strategies, research, monitoring and assessment, resource protection, restoration, enforcement, and surveillance activities.

(iv) An evaluation of the advantages of cooperative State and Federal management if all or part of the proposed sanctuary is within the territorial limits of any State or is superjacent to the subsoil and seabed within the seaward boundary of a State, as that boundary is established

under the Submerged Lands Act (43 U.S.C. 1301 et seq.).

(v) An estimate of the annual cost to the Federal Government of the proposed designation, including costs of personnel, equipment and facilities, enforcement, research, and public education.

(vi) The proposed regulations referred to in paragraph (1)(A).

(D) Maps depicting the boundaries of the proposed sanctuary.

(E) The basis for the findings made under section 303(a) with respect to the area.

(F) An assessment of the considerations under section 303(b)(1).

(3) Public Hearing.--No sooner than thirty days after issuing a notice under this subsection, the Secretary shall hold at least one public hearing in the coastal area or areas that will be most affected by the proposed designation of the area as a national marine sanctuary for the purpose of receiving the views of interested parties.

(4) Terms of Designation.--The terms of designation of a sanctuary shall include the geographic area proposed to be included within the sanctuary, the characteristics of the area that give it conservation, recreational, ecological, historical, research, educational, or esthetic value, and the types of activities that will be subject to regulation by the Secretary to protect those characteristics. The terms of designation may be modified only by the same procedures by which the original designation is made.

(5) Fishing Regulations.--The Secretary shall provide the appropriate Regional Fishery Management Council with the opportunity to prepare draft regulations for fishing within the Exclusive Economic Zone as the Council may deem necessary to implement the proposed designation. Draft regulations prepared by the Council, or a Council determination that regulations are not necessary pursuant to this paragraph, shall be accepted and issued as proposed regulations by the Secretary unless the Secretary finds that the Council's action fails to fulfill the purposes and policies of this title and the goals and objectives of the proposed designation. In preparing the draft regulations, a Regional Fishery Management Council shall use as guidance the national standards of section 301(a) of the Magnuson-Stevens Act (16 U.S.C. 1851) to the extent that the standards are consistent and compatible with the goals and objectives of the proposed designation. The Secretary shall prepare the fishing regulations, if the Council

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declines to make a determination with respect to the need for regulations, makes a determination which is rejected by the Secretary, or fails to prepare the draft regulations in a timely manner. Any amendments to the fishing regulations shall be drafted, approved, and issued in the same manner as the original regulations. The Secretary shall also cooperate with other appropriate fishery management authorities with rights or responsibilities within a proposed sanctuary at the earliest practicable stage in drafting any sanctuary fishing regulations.

(6) Committee Action.--After receiving the documents under subsection (a)(1)(C), the Committee on Merchant Marine and Fisheries Resources of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate may each hold hearings on the proposed designation and on the matters set forth in the documents. If within the forty-five day period of continuous session of Congress beginning on the date of submission of the documents, either Committee issues a report concerning matters addressed in the documents, the Secretary shall consider this report before publishing a notice to designate the national marine sanctuary.

(b) TAKING EFFECT OF DESIGNATIONS.--

(1) Notice.--In designating a national marine sanctuary, the Secretary shall publish in the Federal Register notice of the designation together with final regulations to implement the designation and any other matters required by law, and submit such notice to the Congress. The Secretary shall advise the public of the availability of the final management plan and the final environmental impact statement with respect to such sanctuary. The Secretary shall issue a notice of designation with respect to a proposed national marine sanctuary site not later than 30 months after the date a notice declaring the site to be an active candidate for sanctuary designation is published in the Federal Register under regulations issued under this Act, or shall publish not later than such date in the Federal Register findings regarding why such notice has not been published. No notice of designation may occur until the expiration of the period for Committee action under subsection (a)(6). The designation (and any of its terms not disapproved under this subsection) and regulations shall take effect and become final after the close of a review period of forty-five days of continuous session of Congress beginning on the day on which such notice is published unless in the case of a natural [sic] marine sanctuary that is located partially or entirely within the seaward boundary of any State, the Governor affected certifies to the Secretary that the designation or any of its terms is unacceptable, in which case the designation or the unacceptable term shall not take effect in the area of the sanctuary lying within the seaward boundary of the State.

(2) Withdrawal of Designation.-- If the Secretary considers that actions taken under paragraph (1) will affect the designation of a national marine sanctuary in a manner that the goals and objectives of the sanctuary or System cannot be fulfilled, the Secretary may withdraw the entire designation. If the Secretary does not withdraw the designation, only those terms of the designation or not certified under paragraph (1) shall take effect.

(3) Procedures.-- In computing the forty-five-day periods of continuous session of Congress pursuant to subsection (a)(6) and paragraph (1) of this subsection--

(A) continuity of session is broken only by an adjournment of Congress sine die; and

(B) the days on which either House of Congress is not in session because of an adjournment of more than three days to a day certain are excluded.

(c) ACCESS AND VALID RIGHTS.--

(1) Nothing in this title shall be construed as terminating or granting to the Secretary the right to terminate any valid lease, permit, license, or right of subsistence use or of access that is in existence on the date of designation of any national marine sanctuary.

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(2) The exercise of a lease, permit, license, or right is subject to regulation by the Secretary consistent with the purposes for which the sanctuary is designated.

(d) INTERAGENCY COOPERATION.--

(1) Review of Agency Actions.--

(A) In General.--Federal agency actions internal or external to a national marine sanctuary, including private activities authorized by licenses, leases, or permits, that are likely to destroy, cause the loss of, or injure any sanctuary resource are subject to consultation with the Secretary.

(B) Agency Statements Required.-- Subject to any regulations the Secretary may establish each Federal agency proposing an action described in subparagraph (A) shall provide the Secretary with a written statement describing the action and its potential effects on sanctuary resources at the earliest practicable time, but in no case later than 45 days before the final approval of the action unless such Federal agency and the Secretary agree to a different schedule.

(2) Secretary's Recommended Alternatives.--If the Secretary finds that a Federal agency action is likely to destroy, cause the loss of, or injure a sanctuary resource, the Secretary shall (within 45 days of receipt of complete information on the proposed agency action) recommend reasonable and prudent alternatives, which may include conduct of the action elsewhere, which can be taken by the Federal agency in implementing the agency action that will protect sanctuary resources.

(3) Response to Recommendations.--The agency head who receives the Secretary's recommended alternatives under paragraph (2) shall promptly consult with the Secretary on the alternatives. If the agency head decides not to follow the alternatives, the agency head shall provide the Secretary with a written statement explaining the reasons for that decision.

(4) FAILURE TO FOLLOW ALTERNATIVE.- If the head of a Federal agency takes an action other than an alternative recommended by the Secretary and such action results in the destruction of, loss of, or injury to a sanctuary resource, the head of the agency shall promptly prevent and mitigate further damage and restore or replace the sanctuary resource in a manner approved by the Secretary.

(e) REVIEW OF MANAGEMENT PLANS.--Not more than 5 years after the date of designation of any national marine sanctuary, and thereafter at intervals not exceeding 5 years, the Secretary shall evaluate the substantive progress toward implementing the management plan and goals for the sanctuary, especially the effectiveness of site-specific management techniques and strategies, and shall revise the management plan and regulations as necessary to fulfill the purposes and policies of this title. This review shall include a prioritization of management objectives.

(f) LIMITATION ON DESIGNATION OF NEW SANCTUARIES.-

(1) FINDING REQUIRED.- The Secretary may not publish in the Federal Register any sanctuary designation notice or regulations proposing to designate a new sanctuary, unless the Secretary has published a finding that--

(A) the addition of a new sanctuary will not have a negative impact on the System; and

(B) sufficient resources were available in the fiscal year in which the finding is made to--

(i) effectively implement sanctuary management plans for each sanctuary in the System; and

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(ii) complete site characterization studies and inventory known sanctuary resources, including cultural resources, for each sanctuary in the System within 10 years after the date that the finding is made if the resources available for those activities are maintained at the same level for each fiscal year in that 10 year period.

(2) **DEADLINE-** If the Secretary does not submit the findings required by paragraph (1) before February 1, 2004, the Secretary shall submit to the Congress before October 1, 2004, a finding with respect to whether the requirements of paragraph (2) have been met by all existing sanctuaries.

(3) **LIMITATION ON APPLICATION-** Paragraph (1) does not apply to any sanctuary designation documents for--

(A) a Thunder Bay National Marine Sanctuary; or

(B) a Northwestern Hawaiian Islands National Marine Sanctuary.

(g) **NORTHWESTERN HAWAIIAN ISLANDS CORAL REEF RESERVE.-**

(1) **PRESIDENTIAL DESIGNATION.-** The President, after consultation with the Governor of the State of Hawaii, may designate any Northwestern Hawaiian Islands coral reef or coral reef ecosystem as a coral reef reserve to be managed by the Secretary of Commerce.

(2) **SECRETARIAL ACTION.-** Upon the designation of a reserve under paragraph (1) by the President, the Secretary shall--

(A) take action to initiate the designation of the reserve as a National Marine Sanctuary under sections 303 and 304 of the National Marine Sanctuaries Act (16 U.S.C. 1433);

(B) establish a Northwestern Hawaiian Islands Reserve Advisory Council under section 315 of that Act (16 U.S.C. 1445a), the membership of which shall include at least 1 representative from Native Hawaiian groups; and

(C) until the reserve is designated as a National Marine Sanctuary, manage the reserve in a manner consistent with the purposes and policies of that Act.

(3) **PUBLIC COMMENT-** Notwithstanding any other provision of law, no closure areas around the Northwestern Hawaiian Islands shall become permanent without adequate review and comment.

(4) **COORDINATION-** The Secretary shall work with other Federal agencies and the Director of the National Science Foundation, to develop a coordinated plan to make vessels and other resources available for conservation or research activities for the reserve.

(5) **REVIEW-** If the Secretary has not designated a national marine sanctuary in the Northwestern Hawaiian Islands under sections 303 and 304 of the National Marine Sanctuaries Act (16 U.S.C. 1433, 1434) before October 1, 2005, the Secretary shall conduct a review of the management of the reserve under section 304(e) of that Act (16 U.S.C. 1434(e)).

(6) **REPORT-** No later than 6 months after the date of enactment of this Act, the Secretary shall submit a report to the Senate Committee on Commerce, Science, and Transportation and the House of Representatives Committee on Resources, describing actions taken to implement this subsection, including costs of monitoring, enforcing, and addressing marine debris, and the extent to which the fiscal or other resources necessary to carry out this subsection are reflected in the Budget of the United States Government submitted by the President under section 1104 of title 31, United States Code.

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(7) AUTHORIZATION OF APPROPRIATIONS- There are authorized to be appropriated to the Secretary of Commerce to carry out the provisions of this subsection such sums, not exceeding \$4,000,000 for each of fiscal years 2001, 2002, 2003, 2004, and 2005, as are reported under paragraph (6) to be reflected in the Budget of the United States Government.

Sec. 305. APPLICATION OF REGULATIONS AND INTERNATIONAL NEGOTIATIONS

(a) REGULATIONS.--This title and the regulations issued under section 304 shall be applied in accordance with generally recognized principles of international law, and in accordance with the treaties, conventions, and other agreements to which the United States is a party. No regulation shall apply to or be enforced against a person who is not a citizen, national, or resident alien of the United States, unless in accordance with--

- (1) generally recognized principles of international law;
- (2) an agreement between the United States and the foreign state of which the person is a citizen; or
- (3) an agreement between the United States and the flag state of a foreign vessel, if the person is a crewmember of the vessel.

(b) NEGOTIATIONS.--The Secretary of State, in consultation with the Secretary, shall take appropriate action to enter into negotiations with other governments to make necessary arrangements for the protection of any national marine sanctuary and to promote the purposes for which the sanctuary is established.

(c) INTERNATIONAL COOPERATION.--The Secretary, in consultation with the Secretary of State and other appropriate Federal agencies, shall cooperate with other governments and international organizations in the furtherance of the purposes and policies of this title and consistent with applicable regional and multilateral arrangements for the protection and management of special marine areas.

Sec. 306. PROHIBITED ACTIVITIES

It is unlawful for any person to--

- (1) destroy, cause the loss of, or injure any sanctuary resource managed under law or regulations for that sanctuary;
- (2) possess, sell, offer for sale, purchase, import, export, deliver, carry, transport, or ship by any means any sanctuary resource taken in violation of this section;
- (3) interfere with the enforcement of this title; by--
 - (A) refusing to permit any officer authorized to enforce this title to board a vessel, other than a vessel operated by the Department of Defense or United States Coast Guard, subject to such person's control for the purposes of conducting any search or inspection in connection with the enforcement of this title;
 - (B) resisting, opposing, impeding, intimidating, harassing, bribing, interfering with, or forcibly assaulting any person authorized by the Secretary to implement this title or any such authorized officer in the conduct of any search or inspection performed under this title; or
 - (C) knowingly and willfully submitting false information to the Secretary or any officer authorized to enforce this title in connection with any search or inspection conducted under this title; or
- (4) violate any provision of this title or any regulation or permit issued pursuant to this title.

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Sec. 307. ENFORCEMENT

(a) IN GENERAL.--The Secretary shall conduct such enforcement activities as are necessary and reasonable to carry out this title.

(b) POWERS OF AUTHORIZED OFFICERS.--Any person who is authorized to enforce this title may--

(1) board, search, inspect, and seize any vessel suspected of being used to violate this title or any regulation or permit issued under this title and any equipment, stores, and cargo of such vessel;

(2) seize wherever found any sanctuary resource taken or retained in violation of this title or any regulation or permit issued under this title;

(3) seize any evidence of a violation of this title or of any regulation or permit issued under this title;

(4) execute any warrant or other process issued by any court of competent jurisdiction; and

(5) exercise any other lawful authority. ; and

(6) arrest any person, if there is reasonable cause to believe that such a person has committed an act prohibited by section 306(3).

(c) CRIMINAL OFFENSES-

(1) OFFENSES.- A person is guilty of an offense under this subsection if the person commits any act prohibited by section 306(3).

(2) PUNISHMENT.- Any person that is guilty of an offense under this subsection--

(A) except as provided in subparagraph (B), shall be fined under title 18, United States Code, imprisoned for not more than 6 months, or both; or

(B) in the case of a person who in the commission of such an offense uses a dangerous weapon, engages in conduct that causes bodily injury to any person authorized to enforce this title or any person authorized to implement the provisions of this title, or places any such person in fear of imminent bodily injury, shall be fined under title 18, United States Code, imprisoned for not more than 10 years, or both.

(c) (d) CIVIL PENALTIES.--

(1) Civil penalty.--Any person subject to the jurisdiction of the United States who violates this title or any regulation or permit issued under this title shall be liable to the United States for a civil penalty of not more than \$100,000 for each such violation, to be assessed by the Secretary. Each day of a continuing violation shall constitute a separate violation.

(2) Notice.--No penalty shall be assessed under this subsection until after the person charged has been given notice and an opportunity for a hearing.

(3) In Rem Jurisdiction.--A vessel used in violating this title or any regulation or permit issued under this title shall be liable in rem for any civil penalty assessed for such violation. Such penalty shall constitute a maritime lien on the vessel and may be recovered in an action in rem in the district court of the United States having jurisdiction over the vessel.

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(4) Review of Civil Penalty.--Any person against whom a civil penalty is assessed under this subsection may obtain review in the United States district court for the appropriate district by filing a complaint in such court not later than 30 days after the date of such order.

(5) Collection of Penalties.--If any person fails to pay an assessment of a civil penalty under this section after it has become a final and unappealable order, or after the appropriate court has entered final judgment in favor of the Secretary, the Secretary shall refer the matter to the Attorney General, who shall recover the amount assessed in any appropriate district court of the United States. In such action, the validity and appropriateness of the final order imposing the civil penalty shall not be subject to review.

(6) Compromise or Other Action by Secretary.--The Secretary may compromise, modify, or remit, with or without conditions, any civil penalty which is or may be imposed under this section.

(d) (e) FORFEITURE.--

(1) In General.--Any vessel (including the vessel's equipment, stores, and cargo) and other item used, and any sanctuary resource taken or retained, in any manner, in connection with or as a result of any violation of this title or of any regulation or permit issued under this title shall be subject to forfeiture to the United States pursuant to a civil proceeding under this subsection. The proceeds from forfeiture actions under this subsection shall constitute a separate recovery in addition to any amounts recovered as civil penalties under this section or as civil damages under section 312. None of those proceeds shall be subject to set-off.

(2) Application of the Customs Laws.--The Secretary may exercise the authority of any United States official granted by any relevant customs law relating to the seizure, forfeiture, condemnation, disposition, remission, and mitigation of property in enforcing this title.

(3) Disposal of Sanctuary Resources.--Any sanctuary resource seized pursuant to this title may be disposed of pursuant to an order of the appropriate court or, if perishable, in a manner prescribed by regulations promulgated by the Secretary. Any proceeds from the sale of such sanctuary resource shall for all purposes represent the sanctuary resource so disposed of in any subsequent legal proceedings.

(4) Presumption.--For the purposes of this section there is a rebuttable presumption that all sanctuary resources found on board a vessel that is used or seized in connection with a violation of this title or of any regulation or permit issued under this title were taken or retained in violation of this title or of a regulation or permit issued under this title.

(e) (f) PAYMENT OF STORAGE, CARE, AND OTHER COSTS.--

(1) Expenditures.--

(A) Notwithstanding any other law, amounts received by the United States as civil penalties, forfeitures of property, and costs imposed under paragraph (2) shall be retained by the Secretary in the manner provided for in section 107(f)(1) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980.

(B) Amounts received under this section for forfeitures and costs imposed under paragraph (2) shall be used to pay the reasonable and necessary costs incurred by the Secretary to provide temporary storage, care, maintenance, and disposal of any sanctuary resource or other property seized in connection with a violation of this title or any regulation or permit issued under this title.

(C) Amounts received under this section as civil penalties and any amounts remaining after the operation of subparagraph (B) shall be used, in order of priority, to--

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(i) manage and improve the national marine sanctuary with respect to which the violation occurred that resulted in the penalty or forfeiture;

(ii) pay a reward to any person who furnishes information leading to an assessment of a civil penalty, or to a forfeiture of property, for a violation of this title or any regulation or permit issued under this title; and

(iii) manage and improve any other national marine sanctuary.

(2) Liability for Costs.--Any person assessed a civil penalty for a violation of this title or of any regulation or permit issued under this title, and any claimant in a forfeiture action brought for such a violation, shall be liable for the reasonable costs incurred by the Secretary in storage, care, and maintenance of any sanctuary resource or other property seized in connection with the violation.

(f) (g) SUBPOENAS.--In the case of any hearing under this section which is determined on the record in accordance with the procedures provided for under section 554 of title 5, United States Code, the Secretary may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, electronic files, and documents, and may administer oaths.

(g) (h) USE OF RESOURCES OF STATE AND OTHER FEDERAL AGENCIES.—The Secretary shall, whenever appropriate, use by agreement the personnel, services, and facilities of State and other Federal departments, agencies, and instrumentalities, on a reimbursable or nonreimbursable basis, to carry out the Secretary's responsibilities under this section.

(h) (i) COAST GUARD AUTHORITY NOT LIMITED.--Nothing in this section shall be considered to limit the authority of the Coast Guard to enforce this or any other Federal law under section 89 of title 14, United States Code.

(i) (j) INJUNCTIVE RELIEF.--If the Secretary determines that there is an imminent risk of destruction or loss of or injury to a sanctuary resource, or that there has been actual destruction or loss of, or injury to, a sanctuary resource which may give rise to liability under section 312, the Attorney General, upon request of the Secretary, shall seek to obtain such relief as may be necessary to abate such risk or actual destruction, loss, or injury, or to restore or replace the sanctuary resource, or both. The district courts of the United States shall have jurisdiction in such a case to order such relief as the public interest and the equities of the case may require.

(j) (k) AREA OF APPLICATION AND ENFORCEABILITY.--The area of application and enforceability of this title includes the territorial sea of the United States, as described in Presidential Proclamation 5928 of December 27, 1988, which is subject to the sovereignty of the United States, and the United States exclusive economic zone, consistent with international law.

(l) NATIONWIDE SERVICE OF PROCESS.- In any action by the United States under this title, process may be served in any district where the defendant is found, resides, transacts business, or has appointed an agent for the service of process.

Sec. 308. SEVERABILITY

If any provision of this Act or the application thereof to any person or circumstances is held invalid, the validity of the remainder of this Act and of the application of such provision to other persons and circumstances shall not be affected thereby.

SEC. 308. REGULATIONS.

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The Secretary may issue such regulations as may be necessary to carry out this title.

Sec. 309. RESEARCH, MONITORING, AND EDUCATION.

(a) IN GENERAL.--The Secretary shall conduct research, monitoring, evaluation, and education programs as are necessary and reasonable to carry out the purposes and policies of this title.

(b) PROMOTION AND COORDINATION OF SANCTUARY USE.--The Secretary shall take such action as is necessary and reasonable to promote and coordinate the use of national marine sanctuaries for research, monitoring, and education purposes. Such action may include consulting with Federal agencies, States, local governments, regional agencies, interstate agencies, or other persons to promote use of one or more sanctuaries for research, monitoring, and education, including coordination with the National Estuarine Research Reserve System.

(a) IN GENERAL- The Secretary shall conduct, support, or coordinate research, monitoring, evaluation, and education programs consistent with subsections (b) and (c) and the purposes and policies of this title.

(b) RESEARCH AND MONITORING.-

(1) IN GENERAL.- The Secretary may--

(A) support, promote, and coordinate research on, and long-term monitoring of, sanctuary resources and natural processes that occur in national marine sanctuaries, including exploration, mapping, and environmental and socioeconomic assessment;

(B) develop and test methods to enhance degraded habitats or restore damaged, injured, or lost sanctuary resources; and

(C) support, promote, and coordinate research on, and the conservation, curation, and public display of, the cultural, archeological, and historical resources of national marine sanctuaries.

(2) AVAILABILITY OF RESULTS.- The results of research and monitoring conducted, supported, or permitted by the Secretary under this subsection shall be made available to the public.

(c) EDUCATION-

(1) IN GENERAL.- The Secretary may support, promote, and coordinate efforts to enhance public awareness, understanding, and appreciation of national marine sanctuaries and the System. Efforts supported, promoted, or coordinated under this subsection must emphasize the conservation goals and sustainable public uses of national marine sanctuaries and the System.

(2) EDUCATIONAL ACTIVITIES.- Activities under this subsection may include education of the general public, teachers, students, national marine sanctuary users, and ocean and coastal resource managers.

(d) INTERPRETIVE FACILITIES.-

(1) IN GENERAL.- The Secretary may develop interpretive facilities near any national marine sanctuary.

(2) FACILITY REQUIREMENT.- Any facility developed under this subsection must emphasize the conservation goals and sustainable public uses of national marine sanctuaries by providing the public with information about the conservation, recreational, ecological, historical, cultural, archeological, scientific, educational, or esthetic qualities of the national marine sanctuary.

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(e) CONSULTATION AND COORDINATION.- In conducting, supporting, and coordinating research, monitoring, evaluation, and education programs under subsection (a) and developing interpretive facilities under subsection (d), the Secretary may consult or coordinate with Federal, interstate, or regional agencies, States or local governments.

Sec. 310. SPECIAL USE PERMITS

(a) ISSUANCE OF PERMITS.--The Secretary may issue special use permits which authorize the conduct of specific activities in a national marine sanctuary if the Secretary determines such authorization is necessary--

(1) to establish conditions of access to and use of any sanctuary resource; or

(2) to promote public use and understanding of a sanctuary resource.

(b) PUBLIC NOTICE REQUIRED.- The Secretary shall provide appropriate public notice before identifying any category of activity subject to a special use permit under subsection (a).

(b) (c) PERMIT TERMS.--A permit issued under this section--

(1) shall authorize the conduct of an activity only if that activity is compatible with the purposes for which the sanctuary is designated and with protection of sanctuary resources;

(2) shall not authorize the conduct of any activity for a period of more than 5 years unless renewed by the Secretary;

(3) shall require that activities carried out under the permit be conducted in a manner that does not destroy, cause the loss of, or injure sanctuary resources; and

(4) shall require the permittee to purchase and maintain comprehensive general liability insurance, or post an equivalent bond, against claims arising out of activities conducted under the permit and to agree to hold the United States harmless against such claims.

(c) (d) FEES.--

(1) Assessment and Collection.--The Secretary may assess and collect fees for the conduct of any activity under a permit issued under this section.

(2) Amount.--The amount of a fee under this subsection shall be equal to the sum of--

(A) costs incurred, or expected to be incurred, by the Secretary in issuing the permit;

(B) costs incurred, or expected to be incurred, by the Secretary as a direct result of the conduct of the activity for which the permit is issued, including costs of monitoring the conduct of the activity; and

(C) an amount which represents the fair market value of the use of the sanctuary resource. and a reasonable, return to the United States Government.

(3) Use of Fees.--Amounts collected by the Secretary in the form of fees under this section may be used by the Secretary--

(A) for issuing and administering permits under this section; and

(B) for expenses of designating and managing national marine sanctuaries.

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(4) **WAIVER OR REDUCTION OF FEES.**- The Secretary may accept in-kind contributions in lieu of a fee under paragraph (2)(C), or waive or reduce any fee assessed under this subsection for any activity that does not derive a profit from the access to or use of sanctuary resources.

(d) (e) **VIOLATIONS.**--Upon violation of a term or condition of a permit issued under this section, the Secretary may--

(1) suspend or revoke the permit without compensation to the permittee and without liability to the United States;

(2) assess a civil penalty in accordance with section 307; or

(3) both.

(e) (f) **REPORTS.**--Each person issued a permit under this section shall submit an annual report to the Secretary not later than December 31 of each year which describes activities conducted under that permit and revenues derived from such activities during the year.

(f) (g) **FISHING.**--Nothing in this section shall be considered to require a person to obtain a permit under this section for the conduct of any fishing activities in a national marine sanctuary.

Sec. 311. COOPERATIVE AGREEMENTS, DONATIONS, AND ACQUISITIONS

(a) **COOPERATIVE AGREEMENTS, GRANTS AND OTHER AGREEMENTS.**—The Secretary may enter into cooperative agreements, financial agreements, grants, contracts, or other agreements with States, local governments, regional agencies, interstate agencies, or other persons to carry out the purposes and policies of this title.

(a) **AGREEMENTS AND GRANTS.**- The Secretary may enter into cooperative agreements, contracts, or other agreements with, or make grants to, States, local governments, regional agencies, interstate agencies, or other persons to carry out the purposes and policies of this title.

(b) **AUTHORIZATION TO SOLICIT DONATIONS.**--The Secretary may enter into such agreements with any nonprofit organization authorizing the organization to solicit private donations to carry out the purposes and policies of this title.

(c) **DONATIONS.**--The Secretary may accept donations of funds, property, and services for use in designating and administering national marine sanctuaries under this title. Donations accepted under this section shall be considered as a gift or bequest to or for the use of the United States.

(d) **ACQUISITIONS.**--The Secretary may acquire by purchase, lease, or exchange, any land, facilities, or other property necessary and appropriate to carry out the purposes and policies of this title

(e) **USE OF RESOURCES OF OTHER GOVERNMENT AGENCIES.**- The Secretary may, whenever appropriate, enter into an agreement with a State or other Federal agency to use the personnel, services, or facilities of such agency on a reimbursable or nonreimbursable basis, to assist in carrying out the purposes and policies of this title.

(f) **AUTHORITY TO OBTAIN GRANTS.**- Notwithstanding any other provision of law that prohibits a Federal agency from receiving assistance, the Secretary may apply for, accept, and use grants from other Federal agencies, States, local governments, regional agencies, interstate agencies, foundations, or other persons, to carry out the purposes and policies of this title.

Sec. 312. DESTRUCTION OR LOSS OF, OR INJURY TO, SANCTUARY RESOURCES

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(a) LIABILITY FOR INTEREST.--

(1) Liability to United States united states.--Any person who destroys, causes the loss of, or injures any sanctuary resource is liable to the United States for an amount equal to the sum of--

(A) the amount of response costs and damages resulting from the destruction, loss, or injury; and

(B) interests on that amount calculated in the manner described under section 1005 of the Oil Pollution Act of 1990.

(2) Liability In Rem.--Any vessel used to destroy, cause the loss of, or injure any sanctuary resource shall be liable in rem to the United States for response costs and damages resulting from such destruction, loss, or injury. The amount of that liability shall constitute a maritime lien on the vessel and may be recovered in an action in rem in the district court of the United States having jurisdiction over the vessel.

(3) Defenses.--A person is not liable under this subsection if that person establishes that--

(A) the destruction or loss of, or injury to, the sanctuary resource was caused solely by an act of God, an act of war, or an act or omission of a third party, and the person acted with due care;

(B) the destruction, loss, or injury was caused by an activity authorized by Federal or State law; or

(C) the destruction, loss, or injury was negligible.

(4) Limits to Liability.-- Nothing in sections 4281-4289 of the Revised Statutes of the United States or section 3 of the Act of February 13, 1893, shall limit the liability of any person under this title.

(b) RESPONSE ACTIONS AND DAMAGE ASSESSMENT.-

(1) Response Actions.--The Secretary may undertake or authorize all necessary actions to prevent or minimize the destruction or loss of, or injury to, sanctuary resources, or to minimize the imminent risk of such destruction, loss, or injury.

(2) Damage Assessment.--The Secretary shall assess damages to sanctuary resources in accordance with section 302(6).

(c) CIVIL ACTIONS FOR RESPONSE COSTS AND DAMAGES.—

(1) The Attorney General, upon request of the Secretary, may commence a civil action in the United States district court for the appropriate district against any person or vessel who may be liable under subsection (a) for response costs and damages. The Secretary, acting as Trustee for sanctuary resources for the United States, shall submit a request for such an action to the Attorney General whenever a person may be liable for such costs or damages.

(2) An action under this subsection may be brought in the United States district court for any district in which-

(A) the defendant is located, resides, or is doing business, in the case of an action against a person;

(B) the vessel is located, in the case of an action against a vessel; or

(C) the destruction of, loss of, or injury to a sanctuary resource occurred.

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(d) USE OF RECOVERED AMOUNTS.--Response costs and damages recovered by the Secretary under this section shall be retained by the Secretary in the manner provided for in section 107(f)(1) of the Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C. 9607(f)(1)), and used as follows:

(1) Response Costs And Damage Assessments.-- Twenty percent of amounts recovered under this section, up to a maximum balance of \$750,000, shall be used to finance response actions and damage assessments by the Secretary.

(2) Restoration, Replacement, Management, And Improvement.—Amounts remaining after the operation of paragraph (1) shall be used, in order of priority--

(A) to restore, replace, or acquire the equivalent of the sanctuary resources which were the subject of the action;

(B) to manage and improve the national marine sanctuary within which are located the sanctuary resources which were the subject of the action; and

(C) to manage and improve any other national marine sanctuary.

(1) RESPONSE COSTS.- Amounts recovered by the United States for costs of response actions and damage assessments under this section shall be used, as the Secretary considers appropriate--

(A) to reimburse the Secretary or any other Federal or State agency that conducted those activities; and

(B) after reimbursement of such costs, to restore, replace, or acquire the equivalent of any sanctuary resource.

(2) OTHER AMOUNTS.- All other amounts recovered shall be used, in order of priority--

(A) to restore, replace, or acquire the equivalent of the sanctuary resources that were the subject of the action, including for costs of monitoring and the costs of curation and conservation of archeological, historical, and cultural sanctuary resources;

(B) to restore degraded sanctuary resources of the national marine sanctuary that was the subject of the action, giving priority to sanctuary resources and habitats that are comparable to the sanctuary resources that were the subject of the action; and

(C) to restore degraded sanctuary resources of other national marine sanctuaries.

(3) Federal-State Coordination.--Amounts recovered under this section with respect to sanctuary resources lying within the jurisdiction of a State shall be used under paragraphs (2)(A) and (B) in accordance with the court decree or settlement agreement and an agreement entered into by the Secretary and the Governor of that State.

(e) STATUTE OF LIMITATIONS- An action for response costs or damages under subsection (c) shall be barred unless the complaint is filed within 3 years after the date on which the Secretary completes a damage assessment and restoration plan for the sanctuary resources to which the action relates.

Sec. 313. AUTHORIZATION OF APPROPRIATIONS

There are authorized to be appropriated to the Secretary to carry out this title the following: (1) \$12,000,000 for fiscal year 1997; (2) \$15,000,000 for fiscal year 1998; and (3) \$18,000,000 for fiscal year 1999.

SEC. 313. AUTHORIZATION OF APPROPRIATIONS.

There are authorized to be appropriated to the Secretary--

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(1) to carry out this title--

(A) \$32,000,000 for fiscal year 2001;

(B) \$34,000,000 for fiscal year 2002;

(C) \$36,000,000 for fiscal year 2003;

(D) \$38,000,000 for fiscal year 2004;

(E) \$40,000,000 for fiscal year 2005; and

(2) for construction projects at national marine sanctuaries, \$6,000,000 for each of fiscal years 2001, 2002, 2003, 2004, and 2005.

Sec. 314. U.S.S. MONITOR ARTIFACTS AND MATERIALS

(a) CONGRESSIONAL POLICY. -- In recognition of the historical significance of the wreck of the United States ship Monitor to coastal North Carolina and to the area off the coast of North Carolina known as the Graveyard of the Atlantic, the Congress directs that a suitable display of artifacts and materials from the United States ship Monitor be maintained permanently at an appropriate site in coastal North Carolina. [P.L. 102-587 authorized a grant for the acquisition of space in Hatteras Village, NC, for display of artifacts and administration and operations of the Monitor National Marine Sanctuary.

(b) INTERPRETATION AND DISPLAY OF ARTIFACTS.--

(1) Submission Of Plan. -- The Secretary shall, within six months after the date of the enactment of this section, submit to the Committee on Merchant Marine and Fisheries of the House of Representatives a plan for a suitable display in coastal North Carolina of artifacts and materials of the United States ship Monitor.

(2) Contents Of Plan.--The plan submitted under subsection (a) shall, at a minimum, contain--

(A) an identification of appropriate sites in coastal North Carolina, either existing or proposed, for display of artifacts and materials of the United States ship Monitor;

(B) an identification of suitable artifacts and materials, including artifacts recovered or proposed for recovery, for display in coastal North Carolina;

(C) an interpretive plan for the artifacts and materials which focuses on the sinking, discovery, and subsequent management of the wreck of the United States ship Monitor; and

(D) a draft cooperative agreement with the State of North Carolina to implement the plan.

(c) (b) DISCLAIMER. --This section shall not affect the following:

(1) Responsibilities Of Secretary.--The responsibilities of the Secretary to provide for the protection, conservation, and display of artifacts and materials from the United States ship Monitor.

(2) Authority Of Secretary.--The authority of the Secretary to designate the Mariner's Museum, located at Newport News, Virginia, as the principal museum for coordination of activities referred to in paragraph (1).

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Sec. 315. ADVISORY COUNCILS

(a) ESTABLISHMENT.--The Secretary may establish one or more advisory councils (in this section referred to as an 'Advisory Council') to provide assistance advise and make recommendations to the Secretary regarding the designation and management of national marine sanctuaries. The Advisory Councils shall be exempt from the Federal Advisory Committee Act.

(b) MEMBERSHIP.--Members of the Advisory Councils may be appointed from among--

(1) persons employed by Federal or State agencies with expertise in management of natural resources;

(2) members of relevant Regional Fishery Management Councils established under section 302 of the Magnuson-Stevens Fishery Conservation and Management Act; and

(3) representatives of local user groups, conservation and other public interest organizations, scientific organizations, educational organizations, or others interested in the protection and multiple use management of sanctuary resources.

(c) LIMITS ON MEMBERSHIP.--For sanctuaries designated after the date of enactment of the National Marine Sanctuaries Program Amendments Act of 1992, the membership of Advisory Councils shall be limited to no more than 15 members.

(d) STAFFING AND ASSISTANCE.--The Secretary may make available to an Advisory Council any staff, information, administrative services, or assistance the Secretary determines are reasonably required to enable the Advisory Council to carry out its functions.

(e) PUBLIC PARTICIPATION AND PROCEDURAL MATTERS.--The following guidelines apply with respect to the conduct of business meetings of an Advisory Council:

(1) Each meeting shall be open to the public, and interested persons shall be permitted to present oral or written statements on items on the agenda.

(2) Emergency meetings may be held at the call of the chairman or presiding officer.

(3) Timely notice of each meeting, including the time, place, and agenda of the meeting, shall be published locally and in the Federal Register, except that in the case of a meeting of an Advisory Council established to provide assistance regarding any individual national marine sanctuary the notice is not required to be published in the Federal Register.

(4) Minutes of each meeting shall be kept and contain a summary of the attendees and matters discussed.

Sec. 316. ENHANCING SUPPORT FOR NATIONAL MARINE SANCTUARIES

(a) AUTHORITY.- The Secretary may establish a program consisting of--

(1) the creation, adoption, and publication in the Federal Register by the Secretary of a symbol for the national marine sanctuary program, or for individual national marine sanctuaries or the System;

(2) the solicitation of persons to be designated as official sponsors of the national marine sanctuary program or of individual national marine sanctuaries;

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- (3) the designation of persons by the Secretary as official sponsors of the national marine sanctuary program or of individual sanctuaries;
- (4) the authorization by the Secretary of the use of any symbol published under paragraph (1) manufacture, reproduction, or other use of any symbol published under paragraph (1), including the sale of items bearing such a symbol, by official sponsors of the national marine sanctuary program or of individual national marine sanctuaries;
- (5) the creation, marketing, and selling of products to promote the national marine sanctuary program, and entering into exclusive or nonexclusive agreements authorizing entities to create, market or sell on the Secretary's behalf;
- (6) the solicitation and collection by the Secretary of monetary or in-kind contributions from official sponsors for the manufacture, reproduction or use of the symbols published under paragraph (1);
- (7) the retention of any monetary or in-kind contributions collected under paragraphs (5) and (6) by the Secretary; and
- (8) the expenditure and use of any monetary and in-kind contributions, without appropriation, by the Secretary to designate and manage national marine sanctuaries.

Monetary and in-kind contributions raised through the sale, marketing, or use of symbols and products related to an individual national marine sanctuary shall be used to support that sanctuary.

(b) **CONTRACT AUTHORITY.**-- The Secretary may contract with any person for the creation of symbols or the solicitation of official sponsors under subsection (a).

(c) **RESTRICTIONS.**-- The Secretary may restrict the use of the symbols published under subsection (a), and the designation of official sponsors of the national marine sanctuary program or of individual national marine sanctuaries to ensure compatibility with the goals of the national marine sanctuary program.

(d) **PROPERTY OF UNITED STATES.**-- Any symbol which is adopted by the Secretary and published in the Federal Register under subsection (a) is deemed to be the property of the United States.

(e) **PROHIBITED ACTIVITIES.**-- It is unlawful for any person--

- (1) designated as an official sponsor to influence or seek to influence any decision by the Secretary or any other Federal official related to the designation or management of a national marine sanctuary, except to the extent that a person who is not so designated may do so;
- (2) to represent himself or herself to be an official sponsor absent a designation by the Secretary;
- (3) to manufacture, reproduce, or use any symbol adopted by the Secretary absent designation as an official sponsor and without payment of a monetary or in-kind contribution to the Secretary; and
- (3) to manufacture, reproduce, or otherwise use any symbol adopted by the Secretary under subsection (a)(1), including to sell any item bearing such a symbol, unless authorized by the Secretary under subsection (a)(4) or subsection (f); or
- (4) to violate any regulation promulgated by the Secretary under this section.

(f) **COLLABORATIONS.** The Secretary may authorize the use of a symbol adopted by the Secretary under subsection (a)(1) by any person engaged in a collaborative effort with the Secretary to carry out the purposes and policies of this title and to benefit a national marine sanctuary or the System.

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(g) AUTHORIZATION FOR NON-PROFIT PARTNER ORGANIZATION TO SOLICIT SPONSORS.-

(1) IN GENERAL.- The Secretary may enter into an agreement with a non-profit partner organization authorizing it to assist in the administration of the sponsorship program established under this section. Under an agreement entered into under this paragraph, the Secretary may authorize the non-profit partner organization to solicit persons to be official sponsors of the national marine sanctuary system or of individual national marine sanctuaries, upon such terms as the Secretary deems reasonable and will contribute to the successful administration of the sanctuary system. The Secretary may also authorize the non-profit partner organization to collect the statutory contribution from the sponsor, and, subject to paragraph (2), transfer the contribution to the Secretary.

(2) REIMBURSEMENT FOR ADMINISTRATIVE COSTS.- Under the agreement entered into under paragraph (1), the Secretary may authorize the non-profit partner organization to retain not more than 5 percent of the amount of monetary contributions it receives from official sponsors under the agreement to offset the administrative costs of the organization in soliciting sponsors.

(3) PARTNER ORGANIZATION DEFINED.- In this subsection, the term 'partner organization' means an organization that--

(A) draws its membership from individuals, private organizations, corporation, academic institutions, or State and local governments; and

(B) is established to promote the understanding of, education relating to, and the conservation of the resources of a particular sanctuary or 2 or more related sanctuaries.

SEC. 318. DR. NANCY FOSTER SCHOLARSHIP PROGRAM.

(a) ESTABLISHMENT.- The Secretary shall establish and administer through the National Ocean Service the Dr. Nancy Foster Scholarship Program. Under the program, the Secretary shall award graduate education scholarships in oceanography, marine biology or maritime archeology, to be known as Dr. Nancy Foster Scholarships.

(b) PURPOSES- The purposes of the Dr. Nancy Foster Scholarship Program are--

(1) to recognize outstanding scholarship in oceanography, marine biology, or maritime archeology, particularly by women and members of minority groups ; and

(2) to encourage independent graduate level research in oceanography, marine biology, or maritime archeology.

(c) AWARD.- Each Dr. Nancy Foster Scholarship--

(1) shall be used to support graduate studies in oceanography, marine biology, or maritime archeology at a graduate level institution of higher education; and

(2) shall be awarded in accordance with guidelines issued by the Secretary.

(d) DISTRIBUTION OF FUNDS.- The amount of each Dr. Nancy Foster Scholarship shall be provided directly to a recipient selected by the Secretary upon receipt of certification that the recipient will adhere to a specific and detailed plan of study and research approved by a graduate level institution of higher education.

(e) FUNDING- Of the amount available each fiscal year to carry out this title, the Secretary shall award 1 percent as Dr. Nancy Foster Scholarships.

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(f) **SCHOLARSHIP REPAYMENT REQUIREMENT-** The Secretary shall require an individual receiving a scholarship under this section to repay the full amount of the scholarship to the Secretary if the Secretary determines that the individual, in obtaining or using the scholarship, engaged in fraudulent conduct or failed to comply with any term or condition of the scholarship.

(g) **MARITIME ARCHEOLOGY DEFINED-** In this section the term `maritime archeology' includes the curation, preservation, and display of maritime artifacts.

APPENDIX C. FLORIDA KEYS NATIONAL MARINE SANCTUARY PROTECTION ACT

Public Law 101-605 (H.R. 5909)

SECTION 1. SHORT TITLE. This Act may be cited as the "Florida Keys National Marine Sanctuary and Protection Act."

SEC. 2. FINDINGS. The Congress finds and declares the following:

- (1) The Florida Keys extend approximately 220 miles southwest from the southern tip of the Florida peninsula.
- (2) Adjacent to the Florida Keys land mass are located spectacular, unique, and nationally significant marine environments, including seagrass meadows, mangrove islands, and extensive living coral reefs.
- (3) These marine environments support rich biological communities possessing extensive conservation, recreational, commercial, ecological, historical, research, educational, and esthetic values which give this area special national significance.
- (4) These environments are the marine equivalent of tropical rain forests in that they support high levels of biological diversity, are fragile and easily susceptible to damage from human activities, and possess high value to human beings if properly conserved.
- (5) These marine environments are subject to damage and loss of their ecological integrity from a variety of sources of disturbance.
- (6) Vessel groundings along the reefs of the Florida Keys represent one of many serious threats to the continued vitality of the marine environments of the Florida Keys which must be addressed in order to protect their values.
- (7) Action is necessary to provide comprehensive protection for these marine environments by establishing a Florida Keys National Marine Sanctuary, by restricting vessel traffic within such Sanctuary, and by requiring promulgation of a management plan and regulations to protect sanctuary resources.
- (8) The agencies of the United States must cooperate fully to achieve the necessary protection of sanctuary resources.
- (9) The Federal Government and the State of Florida should jointly develop and implement a comprehensive program to reduce pollution in the waters offshore the Florida Keys to protect and restore the water quality, coral reefs, and other living marine resources of the Florida Keys environment.

POLICY AND PURPOSE

SEC. 3.(a) **POLICY.**—It is the policy of the United States to protect and preserve living and other resources of the Florida Keys marine environment.

(b) **PURPOSE.**—The purpose of this Act is to protect the resources of the area described in section 5(b), to educate and interpret for the public regarding the Florida Keys marine environment, and to manage such human uses of the Sanctuary consistent with this Act. Nothing in this Act is intended to restrict activities that do not cause an adverse effect to the resources or property of the Sanctuary or that do not pose harm to users of the Sanctuary.

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DEFINITION

SEC. 4. As used in this Act, the term “adverse effect” means any factor, force, or action that would independently or cumulatively damage, diminish, degrade, impair, destroy, or otherwise harm—

(1) any sanctuary resource, as defined in section 302(8) of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1432(8)); or

(2) any of those qualities, values, or purposes for which the Sanctuary is designated.

SANCTUARY DESIGNATION

SEC. 5.(a) DESIGNATION.—The area described in subsection (b) is designated as the Florida Keys National Marine Sanctuary (in this Act referred to as the “Sanctuary”) under title III of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1431 et seq.). The Sanctuary shall be managed and regulations enforced under all applicable provisions of such title III as if the Sanctuary had been designated under such title.

(b) AREA INCLUDED.—(1) Subject to subsections (c) and (d), the area referred to in subsection (a) consists of all submerged lands and waters, including living marine and other resources within and on those lands and waters, from the mean high water mark to the boundary described under paragraph (2), with the exception of areas within the Fort Jefferson National Monument. The Sanctuary shall be generally identified and depicted on National Oceanic and Atmospheric Administration charts FKNMS 1 and 2, which shall be maintained on file and kept available for public examination during regular business hours at the Office of Ocean and Coastal Resource Management of the National Oceanic and Atmospheric Administration and which shall be updated to reflect boundary modifications under this section.

(2) The boundary referred to in paragraph (1)—

(A) begins at the northeastern-most point of Biscayne National Park located at approximately 25 degrees 39 minutes north latitude, 80 degrees 5 minutes west longitude, then runs eastward to the 300-foot isobath located at approximately 25 degrees 39 minutes north latitude, 80 degrees 4 minutes west longitude;

(B) then runs southward and connects in succession the points at the following coordinates:

(i) 25 degrees 34 minutes north latitude, 80 degrees 4 minutes west longitude,

(ii) 25 degrees 28 minutes north latitude, 80 degrees 5 minutes west longitude,
and

(iii) 25 degrees 21 minutes north latitude, 80 degrees 7 minutes west longitude;

(C) then runs southward to the northeastern corner of the existing Key Largo National Marine Sanctuary located at 25 degrees 16 minutes north latitude, 80 degrees 8 minutes west longitude;

(D) then runs southwesterly approximating the 300-foot isobath and connects in succession the points at the following coordinates:

(i) 25 degrees 7 minutes north latitude, 80 degrees 13 minutes west longitude,

(ii) 24 degrees 57 minutes north latitude, 80 degrees 21 minutes west longitude,

(iii) 24 degrees 39 minutes north latitude, 80 degrees 52 minutes west longitude,

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- (iv) 24 degrees 30 minutes north latitude, 81 degrees 23 minutes west longitude,
- (v) 24 degrees 25 minutes north latitude, 81 degrees 50 minutes west longitude,
- (vi) 24 degrees 22 minutes north latitude, 82 degrees 48 minutes west longitude,
- (vii) 24 degrees 37 minutes north latitude, 83 degrees 6 minutes west longitude,
- (viii) 24 degrees 40 minutes north latitude, 83 degrees 6 minutes west longitude,
- (ix) 24 degrees 46 minutes north latitude, 82 degrees 54 minutes west longitude,
- (x) 24 degrees 44 minutes north latitude, 81 degrees 55 minutes west longitude,
- (xi) 24 degrees 51 minutes north latitude, 81 degrees 26 minutes west longitude,
and
- (xii) 24 degrees 55 minutes north latitude, 80 degrees 56 minutes west
longitude;

(E) then follows the boundary of Everglades National Park in a southerly then northeasterly direction through Florida Bay, Buttonwood Sound, Tarpon Basin, and Blackwater Sound;

(F) after Division Point, then departs from the boundary of Everglades National Park and follows the western shoreline of Manatee Bay, Barnes Sound, and Card Sound;

(G) then follows the southern boundary of Biscayne National Park and the northern boundary of Key Largo National Marine Sanctuary to the southeastern-most point of Biscayne National Park; and

(H) then follows the eastern boundary of the Biscayne National Park to the beginning point specified in subparagraph (A).

(c) AREAS WITHIN STATE OF FLORIDA.—The designation under subsection (a) shall not take effect for any area located within the waters of the State of Florida if, not later than 45 days after the date of enactment of this Act, the Governor of the State of Florida objects in writing to the Secretary of Commerce.

(d) BOUNDARY MODIFICATIONS.—No later than the issuance of the draft environmental impact statement for the Sanctuary under section 304(a) (1) (C) (vii) of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1434(a) (1) (C) (vii)), in consultation with the Governor of the State of Florida, if appropriate, the Secretary of Commerce may make minor modifications to the boundaries of the Sanctuary as necessary to properly protect sanctuary resources. The Secretary of Commerce shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Merchant Marine and Fisheries of the House of Representatives a written notification of such modifications. Any boundary modification made under this subsection shall be reflected on the charts referred to in subsection (b) (1).

PROHIBITION OF CERTAIN USES

SEC. 6.(a) VESSEL TRAFFIC.—(1) Consistent with generally recognized principles of international law, a person may not operate a tank vessel (as that term is defined in section 2101 of title 46, United States Code) or a vessel greater than 50 meters in length in the Area to Be Avoided described in the Federal Register notice of May 9, 1990 (55 Fed. Reg. 19418-19419).

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(2) The prohibition in paragraph (1) shall not apply to necessary operations of public vessels. For the purposes of this paragraph, necessary operations of public vessels shall include operations essential for national defense, law enforcement, and responses to emergencies that threaten life, property, or the environment.

(3) The provisions of paragraphs (1) and (2), including the area in which vessel operations are prohibited under paragraph (1), may be modified by regulations issued jointly by the Secretary of the department in which the Coast guard is operating and the Secretary of Commerce.

(4) This subsection shall be effective on the earliest of the following:

(A) the date that is six months after the date of enactment of this Act,

(B) the date of publication of a notice to mariners consistent with this section, or

(C) the date of publication of new nautical charts consistent with this section.

(b) MINERAL AND HYDROCARBON LEASING, EXPLORATION, DEVELOPMENT, AND PRODUCTION.—No leasing, exploration, development, or production of minerals or hydrocarbons shall be permitted within the Sanctuary.

COMPREHENSIVE MANAGEMENT PLAN

SEC. 7.(a) PREPARATION OF PLAN.—The Secretary of Commerce, in consultation with appropriate Federal, State, and local government authorities and with the Advisory Council established under section 208, shall develop a comprehensive management plan and implementing regulations to achieve the policy and purpose of this Act. The Secretary of Commerce shall complete such comprehensive management plan and final regulations for the Sanctuary not later than 30 months after the date of enactment of this Act. In developing the plan and regulations, the Secretary of Commerce shall follow the procedures specified in sections 303 and 304 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1433 and 1434), except those procedures requiring the delineation of Sanctuary boundaries and development of a resource assessment report. Such comprehensive management plan shall—

(1) facilitate all public and private uses of the Sanctuary consistent with the primary objective of Sanctuary resource protection;

(2) consider temporal and geographical zoning, to ensure protection of sanctuary resources;

(3) incorporate regulations necessary to enforce the elements of the comprehensive water quality protection program developed under section 8 unless the Secretary of Commerce determines that such program does not meet the purpose for which the Sanctuary is designated or is otherwise inconsistent or incompatible with the comprehensive management plan developed under this section;

(4) identify priority needs for research and amounts needed to—

(A) improve management of the Sanctuary, and in particular, the coral reef ecosystem within the Sanctuary; and

(B) identify clearly the cause and effect relationships between factors threatening the health of the coral reef ecosystem in the Sanctuary;

(5) establish a long-term ecological monitoring program and database, including methods to disseminate information on the management of the coral reef ecosystem.

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(6) identify alternative sources of funding needed to fully implement the plan's provisions and supplement appropriations under section 9 of this Act and section 313 of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1444).

(7) ensure coordination and cooperation between Sanctuary managers and other Federal, State, and local authorities with jurisdiction within or adjacent to the Sanctuary;

(8) promote education, among users of the Sanctuary, about coral reef conservation and navigational safety; and

(9) incorporate the existing Looe Key and Key Largo National Marine Sanctuaries into the Florida Keys National Marine Sanctuary except that Looe Key and Key Largo Sanctuaries shall continue to be operated until completion of the comprehensive management plan for the Florida Keys Sanctuary.

(b) PUBLIC PARTICIPATION.—The Secretary of Commerce shall provide for participation by the general public in development of the comprehensive management plan.

(c) TERMINATION OF STUDIES.—On the date of enactment of this Act, all congressionally mandated studies of existing areas in the Florida Keys for designation as National Marine Sanctuaries shall be terminated.

FLORIDA KEYS WATER QUALITY

SEC. 8.(a) WATER QUALITY PROTECTION PROGRAM.—(1) Not later than 18 months after the date of enactment of this Act, the Administrator of the Environmental Protection Agency and the Governor of the State of Florida, in consultation with the Secretary of Commerce, shall develop a comprehensive water quality protection program for the Sanctuary. If the Secretary of Commerce determines that such comprehensive water quality protection program does not meet the purpose for which the Sanctuary is designated or is otherwise inconsistent or incompatible with the comprehensive management plan prepared under section 7, such water quality program shall not be included in the comprehensive management plan. The purposes of such water quality program shall be to—

(A) recommend priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the Sanctuary, including restoration and maintenance of a balanced, indigenous population of corals, shellfish, fish and wildlife, and recreational activities in and on the water; and

(B) assign responsibilities for the implementation of the program among the Governor, the Secretary of Commerce, and the Administrator in accordance with applicable Federal and State laws.

(2) The program required by paragraph (1) shall, under applicable Federal and State laws, provide for measures to achieve the purposes described under paragraph (1), including—

(A) adoption or revision, under applicable Federal and State laws, by the State and the Administrator of applicable water quality standards for the Sanctuary, based on water quality criteria which may utilize biological monitoring or assessment methods, to assure protection and restoration of the water quality, coral reefs, and other living marine resources of the Sanctuary;

(B) adoption under applicable Federal and State laws of enforceable pollution control measures (including water quality-based effluent limitations and best management practices) and methods to eliminate or reduce pollution from point and nonpoint sources;

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(C) establishment of a comprehensive water quality monitoring program to (i) determine the sources of pollution causing or contributing to existing or anticipated pollution problems in the Sanctuary, (ii) evaluate the effectiveness of efforts to reduce or eliminate those sources of pollution, and (iii) evaluate progress toward achieving and maintaining water quality standards and toward protecting and restoring the coral reefs and other living marine resources of the Sanctuary;

(D) provision of adequate opportunity for public participation in all aspects of developing and implementing the program; and

(E) identification of funding for implementation of the program, including appropriate Federal and State cost sharing arrangements.

(b) COMPLIANCE AND ENFORCEMENT.—The Administrator of the Environmental Protection Agency, the Secretary of Commerce, and the Governor of the State of Florida shall ensure compliance with the program required by this section, consistent with applicable Federal and State laws.

(c) CONSULTATION.—In the development and implementation of the program required by paragraph (1), appropriate State and local government officials shall be consulted.

(d) IMPLEMENTATION.—

(1) The Administrator of the Environmental Protection Agency and the Governor of the State of Florida shall implement the program required by this section, in cooperation with the Secretary of Commerce.

(2)(A) The Regional Administrator of the Environmental Protection Agency shall with the Governor of the State of Florida establish a Steering Committee to set guidance and policy for the development and implementation of such program. Membership shall include representatives of the Environmental Protection Agency, the National Park Service, the United States Fish and Wildlife Service, the Army Corps of Engineers, the National Oceanic and Atmospheric Administration, the Florida Department of Community Affairs, the Florida Department of Environmental Regulation, the South Florida Water Management District, and the Florida Keys Aqueduct Authority; three individuals in local government in the Florida Keys; and three citizens knowledgeable about such program.

(B) The Steering Committee shall, on a biennial basis, issue a report to Congress that—

(i) summarizes the progress of the program;

(ii) summarizes any modifications to the program and its recommended actions and plans; and

(iii) incorporates specific recommendations concerning the implementation of the program.

(C) The Administrator of the Environmental Protection Agency and the Administrator of the National Oceanic and Atmospheric Administration shall cooperate with the Florida Department of Environmental Regulation to establish a Technical Advisory Committee to advise the Steering Committee and to assist in the design and prioritization of programs for scientific research and monitoring. The Technical Advisory Committee

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shall be composed of scientists from federal agencies, State agencies, academic institutions, private non-profit organizations, and knowledgeable citizens.

(3)(A) The Regional Administrator of the Environmental Protection Agency shall appoint a Florida Keys Liaison Officer. The Liaison Officer, who shall be located within the State of Florida, shall have the authority and staff to—

(i) assist and support the implementation of the program required by this section, including administrative and technical support for the Steering Committee and Technical Advisory Committee;

(ii) assist and support local, State, and Federal agencies in developing and implementing specific action plans designed to carry out such program;

(iii) coordinate the actions of the Environmental Protection Agency with other Federal agencies, including the National Oceanic and Atmospheric Administration and the National Park Service, and State and local authorities, in developing strategies to maintain, protect, and improve water quality in the Florida Keys;

(iv) collect and make available to the public publications, and other forms of information that the Steering Committee determines to be appropriate, related to the water quality in the vicinity of the Florida Keys; and

(v) provide for public review and comment on the program and implementing actions.

(4)(A) There are authorized to be appropriated to the Administrator of the Environmental Protection Agency \$2,000,000 for fiscal year 1993, \$3,000,000 for fiscal year 1994, and \$4,000,000 for fiscal year 1995, for the purpose of carrying out this section.

(B) There are authorized to be appropriated to the Secretary of Commerce \$300,000 for fiscal year 1993, \$400,000 for fiscal year 1994, and \$500,000 for fiscal year 1995, for the purpose of enabling the National Oceanic and Atmospheric Administration to carry out this section.

(C) Amounts appropriated under this paragraph shall remain available until expended.

(D) No more than 15 percent of the amount authorized to be appropriated under subparagraph (A) for any fiscal year may be expended in that fiscal year on administrative expense.

ADVISORY COUNCIL

SEC. 9.(a) ESTABLISHMENT.—The Secretary of Commerce, in consultation with the Governor of the State of Florida and the Board of County Commissioners of Monroe County, Florida, shall establish an Advisory Council to assist the Secretary in the development and implementation of the comprehensive management plan for the Sanctuary.

(b) MEMBERSHIP.—Members of the Advisory Council may be appointed from among (1) Sanctuary managers, (2) members of other government agencies with overlapping management responsibilities for the Florida Keys marine environment, and (3) representatives of local industries, commercial users, conservation groups, the marine scientific and educational community, recreational user groups, or the general public.

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(c) EXPENSES.—Members of the Advisory Council shall not be paid compensation for their service as members and shall not be reimbursed for actual and necessary traveling and subsistence expenses incurred by them in the performance of their duties as such members.

(d) ADMINISTRATION.—The Advisory Council shall elect a chairperson and may establish subcommittees, and adopt bylaws, rules, and such other administrative requirements and procedures as are necessary for the administration of its functions.

(e) STAFFING AND OTHER ASSISTANCE.—The Secretary of Commerce shall make available to the Advisory Council such staff, information, and administrative services and assistance as the Secretary of Commerce determines are reasonably required to enable the Advisory Council to carry out its functions.

AUTHORIZATION OF APPROPRIATIONS

SEC. 10.(a) AUTHORIZATION FOR SECRETARY OF COMMERCE.—Section 313(2) (C) of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 1444(2) (C)) is amended by striking “\$3,000,000” and inserting in lieu thereof “\$4,000,000.”

(b) AUTHORIZATION FOR EPA ADMINISTRATOR.—There are authorized to be appropriated to the Administrator of the Environmental Protection Agency \$750,000 for each of the fiscal years 1991 and 1992.

(c) REPORT.—The Secretary of Commerce shall, not later than March 1, 1991, submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Merchant Marine and Fisheries of the House of Representatives a report on the future requirements for funding the Sanctuary through fiscal year 1999 under title III of the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C. 14321 et seq.).

Approved November 16, 1990.

APPENDIX D. SECTION 404 OF THE CLEAN WATER ACT

(AS CONTAINED IN THE WITH CODE OF FEDERAL REGULATIONS, JAN 1994)

TITLE 33 - NAVIGATION AND NAVIGABLE WATERS CHAPTER 26 - WATER POLLUTION
PREVENTION AND CONTROL SUBCHAPTER IV - PERMITS AND LICENSES

Sec. 1344. Permits for dredged or fill material

(a) Discharge into navigable waters at specified disposal sites

The Secretary may issue permits, after notice and opportunity for public hearings for the discharge of dredged or fill material into the navigable waters at specified disposal sites. Not later than the fifteenth day after the date an applicant submits all the information required to complete an application for a permit under this subsection, the Secretary shall publish the notice required by this subsection.

(b) Specification for disposal sites

Subject to subsection (c) of this section, each such disposal site shall be specified for each such permit by the Secretary (1) through the application of guidelines developed by the Administrator, in conjunction with the Secretary, which guidelines shall be based upon criteria comparable to the criteria applicable to the territorial seas, the contiguous zone, and the ocean under section 1343(c) of this title, and (2) in any case where such guidelines under clause (1) alone would prohibit the specification of a site, through the application additionally of the economic impact of the site on navigation and anchorage.

(c) Denial or restriction of use of defined areas as disposal sites

The Administrator is authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site, and he is authorized to deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site, whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas. Before making such determination, the Administrator shall consult with the Secretary. The Administrator shall set forth in writing and make public his findings and his reasons for making any determination under this subsection.

(d) "Secretary" defined

The term "Secretary" as used in this section means the Secretary of the Army, acting through the Chief of Engineers.

(e) General permits on State, regional, or nationwide basis

(1) In carrying out his functions relating to the discharge of dredged or fill material under this section, the Secretary may, after notice and opportunity for public hearing, issue general permits on a State, regional, or nationwide basis for any category of activities involving discharges of dredged or fill material if the Secretary determines that the activities in such category are similar in nature, will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effect on the environment. Any general permit issued under this subsection shall (A) be based on the guidelines described in subsection (b)(1) of this section, and (B) set forth the requirements and standards which shall apply to any activity authorized by such general permit. (2) No general permit issued under this subsection shall be for a period of more than five years after the date of its issuance and such general permit may be revoked or modified by the Secretary if, after opportunity for public hearing, the Secretary

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determines that the activities authorized by such general permit have an adverse impact on the environment or such activities are more appropriately authorized by individual permits.

(f) Non-prohibited discharge of dredged or fill material

(1) Except as provided in paragraph (2) of this subsection, the discharge of dredged or fill material - (A) from normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices; (B) for the purpose of maintenance, including emergency reconstruction of recently damaged parts, of currently serviceable, structures such as dikes, dams, levees, groins, riprap, breakwaters, causeways, and bridge abutments or approaches, and transportation structures; (C) for the purpose of construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance of drainage ditches; (D) for the purpose of construction of temporary sedimentation basins on a construction site which does not include placement of fill material into the navigable waters; (E) for the purpose of construction or maintenance of farm roads or forest roads, or temporary roads for moving mining equipment, where such roads are constructed and maintained, in accordance with best management practices, to assure that flow and circulation patterns and chemical and biological characteristics of the navigable waters are not impaired, that the reach of the navigable waters is not reduced, and that any adverse effect on the aquatic environment will be otherwise minimized; (F) resulting from any activity with respect to which a State has an approved program under section 1288(b)(4) of this title which meets the requirements of subparagraphs (B) and (C) of such section, is not prohibited by or otherwise subject to regulation under this section or section 1311(a) or 1342 of this title (except for effluent standards or prohibitions under section 1317 of this title). (2) Any discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced, shall be required to have a permit under this section.

(g) State administration

- (1) The Governor of any State desiring to administer its own individual and general permit program for the discharge of dredged or fill material into the navigable waters (other than those waters which are presently used, or are susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce shoreward to their ordinary high water mark, including all waters which are subject to the ebb and flow of the tide shoreward to their mean high water mark, or mean higher high water mark on the west coast, including wetlands adjacent thereto) within its jurisdiction may submit to the Administrator a full and complete description of the program it proposes to establish and administer under State law or under an interstate compact. In addition, such State shall submit a statement from the attorney general (or the attorney for those State agencies which have independent legal counsel), or from the chief legal officer in the case of an interstate agency, that the laws of such State, or the interstate compact, as the case may be, provide adequate authority to carry out the described program.
- (2) (2) Not later than the tenth day after the date of the receipt of the program and statement submitted by any State under paragraph (1) of this subsection, the Administrator shall provide copies of such program and statement to the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service.
- (3) (3) Not later than the ninetieth day after the date of the receipt by the Administrator of the program and statement submitted by any State, under paragraph (1) of this subsection, the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, shall submit any comments with respect to such program and statement to the Administrator in writing.

(h) Determination of State's authority to issue permits under State program; approval; notification; transfers to State program

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(1) Not later than the one-hundred-twentieth day after the date of the receipt by the Administrator of a program and statement submitted by any State under paragraph (1) of this subsection, the Administrator shall determine, taking into account any comments submitted by the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, pursuant to subsection (g) of this section, whether such State has the following authority with respect to the issuance of permits pursuant to such program: (A) To issue permits which - (i) apply, and assure compliance with, any applicable requirements of this section, including, but not limited to, the guidelines established under subsection (b)(1) of this section, and sections 1317 and 1343 of this title; (ii) are for fixed terms not exceeding five years; and (iii) can be terminated or modified for cause including, but not limited to, the following: (I) violation of any condition of the permit; (II) obtaining a permit by misrepresentation, or failure to disclose fully all relevant facts; (III) change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. (B) To issue permits which apply, and assure compliance with, all applicable requirements of section 1318 of this title, or to inspect, monitor, enter, and require reports to at least the same extent as required in section 1318 of this title. (C) To assure that the public, and any other State the waters of which may be affected, receive notice of each application for a permit and to provide an opportunity for public hearing before a ruling on each such application.

(D) To assure that the Administrator receives notice of each application (including a copy thereof) for a permit. (E) To assure that any State (other than the permitting State), whose waters may be affected by the issuance of a permit may submit written recommendations to the permitting State (and the Administrator) with respect to any permit application and, if any part of such written recommendations are not accepted by the permitting State, that the permitting State will notify such affected State (and the Administrator) in writing of its failure to so accept such recommendations together with its reasons for so doing.

(F) To assure that no permit will be issued if, in the judgment of the Secretary, after consultation with the Secretary of the department in which the Coast Guard is operating, anchorage and navigation of any of the navigable waters would be substantially impaired thereby. (G) To abate violations of the permit or the permit program, including civil and criminal penalties and other ways and means of enforcement.

(H) To assure continued coordination with Federal and Federal-State water-related planning and review processes.

(2) If, with respect to a State program submitted under subsection (g)(1) of this section, the Administrator determines that such State -

(A) has the authority set forth in paragraph (1) of this subsection, the Administrator shall approve the program and so notify (i) such State and (ii) the Secretary, who upon subsequent notification from such State that it is administering such program, shall suspend the issuance of permits under subsections (a) and (e) of this section for activities with respect to which a permit may be issued pursuant to such State program; or

(B) (B) does not have the authority set forth in paragraph (1) of this subsection, the Administrator shall so notify such State, which notification shall also describe the revisions or modifications necessary so that such State may resubmit such program for a determination by the Administrator under this subsection.

(3) If the Administrator fails to make a determination with respect to any program submitted by a State under subsection (g)(1) of this section within one-hundred-twenty days after the date of the receipt of such program, such program shall be deemed approved pursuant to paragraph (2)(A) of this subsection and the Administrator shall so notify such State and the Secretary who, upon subsequent notification from such State that it is administering such program, shall suspend the issuance of permits under subsection (a) and (e) of this section for activities with respect to which a permit may be issued by such State.

(4) After the Secretary receives notification from the Administrator under paragraph (2) or (3) of this subsection that a State permit program has been approved, the Secretary shall transfer any applications for permits pending before the Secretary for activities with respect to which a permit may be issued pursuant to such State program to such State for appropriate action.

(5) Upon notification from a State with a permit program approved under this subsection that such State intends to administer and enforce the terms and conditions of a general permit issued by the Secretary under subsection (e) of

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this section with respect to activities in such State to which such general permit applies, the Secretary shall suspend the administration and enforcement of such general permit with respect to such activities.

(i) Withdrawal of approval

Whenever the Administrator determines after public hearing that a State is not administering a program approved under subsection (h)(2)(A) of this section, in accordance with this section, including, but not limited to, the guidelines established under subsection (b)(1) of this section, the Administrator shall so notify the State, and, if appropriate corrective action is not taken within a reasonable time, not to exceed ninety days after the date of the receipt of such notification, the Administrator shall

- (1) withdraw approval of such program until the Administrator determines such corrective action has been taken, and
- (2) (2) notify the Secretary that the Secretary shall resume the program for the issuance of permits under subsections (a) and (e) of this section for activities with respect to which the State was issuing permits and that such authority of the Secretary shall continue in effect until such time as the Administrator makes the determination described in clause (1) of this subsection and such State again has an approved program.

(j) Copies of applications for State permits and proposed general permits to be transmitted to Administrator

Each State which is administering a permit program pursuant to this section shall transmit to the Administrator (1) a copy of each permit application received by such State and provide notice to the Administrator of every action related to the consideration of such permit application, including each permit proposed to be issued by such State, and (2) a copy of each proposed general permit which such State intends to issue. Not later than the tenth day after the date of the receipt of such permit application or such proposed general permit, the Administrator shall provide copies of such permit application or such proposed general permit to the Secretary and the Secretary of the Interior, acting through the Director of

the United States Fish and Wildlife Service. If the Administrator intends to provide written comments to such State with respect to such permit application or such proposed general permit, he shall so notify such State not later than the thirtieth day after the date of the receipt of such application or such proposed general permit and provide such written comments to such State, after consideration of any comments made in writing with respect to such application or such proposed general permit by the Secretary and the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, not later than the ninetieth day after the date of such receipt. If such State is so notified by the Administrator, it shall not issue the proposed permit until after the receipt of such comments from the Administrator, or after such ninetieth day, whichever first occurs. Such State shall not issue such proposed permit after such ninetieth day if it has received such written comments in which the Administrator objects (A) to the issuance of such proposed permit and such proposed permit is one that has been submitted to the Administrator pursuant to subsection (h)(1)(E) of this section, or, (B) to the issuance of such proposed permit as being outside the requirements of this section, including, but not limited to, the guidelines developed under subsection (b)(1) of this section unless it modifies such proposed permit in accordance with such comments.

Whenever the Administrator objects to the issuance of a permit under the preceding sentence such written objection shall contain a statement of the reasons for such objection and the conditions which such permit would include if it were issued by the Administrator. In any case where the Administrator objects to the issuance of a permit, on request of the State, a public hearing shall be held by the Administrator on such objection. If the State does not resubmit such permit revised to meet such

objection within 30 days after completion of the hearing or, if no hearing is requested within 90 days after the date of such objection, the Secretary may issue the permit pursuant to subsection (a) or (e) of this section, as the case may be, for such source in accordance with the guidelines and requirements of this chapter.

(k) Waiver

In accordance with guidelines promulgated pursuant to subsection (i)(2) of section 1314 of this title, the Administrator is authorized to waive the requirements of subsection (j) of this section at the time of the approval of

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a program pursuant to subsection (h)(2)(A) of this section for any category (including any class, type, or size within such category) of discharge within the State submitting such program.

(l) Categories of discharges not subject to requirements

The Administrator shall promulgate regulations establishing categories of discharges which he determines shall not be subject to the requirements of subsection (j) of this section in any State with a program approved pursuant to subsection (h)(2)(A) of this section. The Administrator may distinguish among classes, types, and sizes within any category of discharges.

(m) Comments on permit applications or proposed general permits by Secretary of the Interior acting through Director of United States Fish and Wildlife Service

Not later than the ninetieth day after the date on which the Secretary notifies the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service that

- (1) an application for a permit under subsection (a) of this section has been received by the Secretary, or
- (2) the Secretary proposes to issue a general permit under subsection (e) of this section, the Secretary of the Interior, acting through the Director of the United States Fish and Wildlife Service, shall submit any comments with respect to such application or such proposed general permit in writing to the Secretary.

(n) Enforcement authority not limited

Nothing in this section shall be construed to limit the authority of the Administrator to take action pursuant to section 1319 of this title.

(o) Public availability of permits and permit applications

A copy of each permit application and each permit issued under this section shall be available to the public. Such permit application or portion thereof, shall further be available on request for the purpose of reproduction.

(p) Compliance

Compliance with a permit issued pursuant to this section, including any activity carried out pursuant to a general permit issued under this section, shall be deemed compliance, for purposes of sections 1319 and 1365 of this title, with sections 1311, 1317, and 1343 of this title.

(q) Minimization of duplication, needless paperwork, and delays in issuance; agreements

Not later than the one-hundred-eightieth day after December 27, 1977, the Secretary shall enter into agreements with the Administrator, the Secretaries of the Departments of Agriculture, Commerce, Interior, and Transportation, and the heads of other appropriate Federal agencies to minimize, to the maximum extent practicable, duplication, needless paperwork, and delays in the issuance of permits under this section. Such agreements shall be developed to assure that, to the maximum extent practicable, a decision with respect to an application for a permit under subsection (a) of this section will be made not later than the ninetieth day after the date the notice for such application is published under subsection (a) of this section.

(r) Federal projects specifically authorized by Congress

The discharge of dredged or fill material as part of the construction of a Federal project specifically authorized by Congress, whether prior to or on or after December 27, 1977, is not prohibited by or otherwise subject to regulation under this section, or a State program approved under this section, or section 1311(a) or 1342 of this title (except for effluent standards or prohibitions under section 1317 of this title), if information on the effects of such discharge,

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including consideration of the guidelines developed under subsection (b)(1) of this section, is included in an environmental impact statement for such project pursuant to the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) and such environmental impact statement has been submitted to Congress before the actual discharge of dredged or fill material in connection with the construction of such project and prior to either authorization of such project or an appropriation of funds for such construction.

(s) Violation of permits

(1) Whenever on the basis of any information available to him the Secretary finds that any person is in violation of any condition or limitation set forth in a permit issued by the Secretary under this section, the Secretary shall issue an order requiring such person to comply with such condition or limitation, or the Secretary shall bring a civil action in accordance with paragraph (3) of this subsection.

(2) A copy of any order issued under this subsection shall be sent immediately by the Secretary to the State in which the violation occurs and other affected States. Any order issued under this subsection shall be by personal service and shall state with reasonable specificity the nature of the violation, specify a time for compliance, not to exceed thirty days, which the Secretary determines is reasonable, taking into account the seriousness of the violation and any good faith efforts to comply with applicable requirements. In any case in which an order under this subsection is issued to a corporation, a copy of such order shall be served on any appropriate corporate officers.

(3) The Secretary is authorized to commence a civil action for appropriate relief, including a permanent or temporary injunction for any violation for which he is authorized to issue a compliance order under paragraph (1) of this subsection. Any action under this paragraph may be brought in the district court of the United States for the district in which the defendant is located or resides or is doing business, and such court shall have jurisdiction to restrain such violation and to require compliance. Notice of the commencement of such action (Note: Probably should be action) shall be given immediately to the appropriate State.

(4) Any person who violates any condition or limitation in a permit issued by the Secretary under this section, and any person who violates any order issued by the Secretary under paragraph (1) of this subsection, shall be subject to a civil penalty not to exceed \$25,000 per day for each violation. In determining the amount of a civil penalty the court shall consider the seriousness of the violation or violations, the economic benefit (if any) resulting from the violation, any history of such violations, any good-faith efforts to comply with the applicable requirements, the economic impact of the penalty on the violator, and such other matters as justice may require.

(t) Navigable waters within State jurisdiction

Nothing in this section shall preclude or deny the right of any State or interstate agency to control the discharge of dredged or fill material in any portion of the navigable waters within the jurisdiction of such State, including any activity of any Federal agency, and each such agency shall comply with such State or interstate requirements both substantive and procedural to control the discharge of dredged or fill material to the same extent that any person is subject to such requirements. This section shall not be construed as affecting or impairing the authority of the Secretary to maintain navigation.

SOURCE

(June 30, 1948, ch. 758, title IV, Sec. 404, as added Oct. 18, 1972, Pub. L. 92-500, Sec. 2, 86 Stat. 884; amended Dec. 27, 1977, Pub. L. 95-217, Sec. 67(a), (b), 91 Stat. 1600; Feb. 4, 1987, Pub. L. 100-4, title III, Sec. 313(d), 101 Stat. 45.)

REFERENCES IN TEXT

The National Environmental Policy Act of 1969, referred to in subsec. (r), is Pub. L. 91-190, Jan. 1, 1970, 83 Stat. 852, as amended, which is classified generally to chapter 55 (Sec. 4321 et seq.) of Title 42, The Public Health and

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Welfare. For complete classification of this Act to the Code, see Short Title note set out under section 4321 of Title 42 and Tables.

AMENDMENTS

1987 - Subsec. (s). Pub. L. 100-4 redesignated par. (5) as (4), substituted "\$25,000 per day for each violation" for "\$10,000 per day of such violation", inserted provision specifying factors to consider in determining the penalty amount, and struck out former par. (4) which read as follows: "(A) Any person who willfully or negligently violates any condition or limitation in a permit issued by the Secretary under this section shall be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or by both. If the conviction is for a violation committed after a first conviction of such person under this paragraph, punishment shall be by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two years, or by both." (B) For the purposes of this paragraph, the term 'person' shall mean, in addition to the definition contained in section 1362(5) of this title, any responsible corporate officer." 1977 - Subsec. (a). Pub. L. 95-217, Sec. 67(a)(1), substituted "The Secretary" for "The Secretary of the Army, acting through the Chief of Engineers," and inserted provision that, not later than the fifteenth day after the date an applicant submits all the information required to complete an application for a permit under this subsection, the Secretary publish the notice required by this subsection. Subsecs. (b), (c). Pub. L. 95-217, Sec. 67(a)(2), substituted "the Secretary" for "the Secretary of the Army". Subsecs. (d) to (t). Pub. L. 95-217, Sec. 67(b), added subsecs. (d) to (t).

TRANSFER OF FUNCTIONS

Enforcement functions of Administrator or other official of the Environmental Protection Agency and of Secretary or other official in Department of Interior relating to review of the Corps of Engineers' dredged and fill material permits and such functions of Secretary of the Army, Chief of Engineers, or other official in Corps of Engineers of the United States Army relating to compliance with dredged and fill material permits issued under this section with respect to pre-construction, construction, and initial operation of transportation system for Canadian and Alaskan natural gas were transferred to the Federal Inspector, Office of Federal Inspector for the Alaska Natural Gas Transportation System, until the first anniversary of the date of initial operation of the Alaska Natural Gas Transportation System, see Reorg. Plan No. 1 of 1979, Sec. 102(a), (b), (e), 203(a), 44 F.R. 33663, 33666, 93 Stat. 1373, 1376, effective July 1, 1979, set out in the Appendix to Title 5, Government Organization and Employees. Office of Federal Inspector for the Alaska Natural Gas Transportation System abolished and functions and authority vested in Inspector transferred to Secretary of Energy by section 3012(b) of Pub. L. 102-486, set out as an Abolition of Office of Federal Inspector note under section 719e of Title 15, Commerce and Trade.

AUTHORITY TO DELEGATE TO STATE OF WASHINGTON FUNCTIONS OF THE SECRETARY RELATING TO LAKE CHELAN, WASHINGTON

Section 76 of Pub. L. 95-217 provided that: "The Secretary of the Army, acting through the Chief of Engineers, is authorized to delegate to the State of Washington upon its request all or any part of those functions vested in such Secretary by section 404 of the Federal Water Pollution Control Act (this section) and by sections 9, 10, and 13 of the Act of March 3, 1899 (sections 401, 403, and 407 of this title), relating to Lake Chelan, Washington, if the Secretary determines (1) that such State has the authority, responsibility, and capability to carry out such functions, and (2) that such delegation is in the public interest. Such delegation shall be subject to such terms and conditions as the Secretary deems necessary, including, but not limited to, suspension and revocation for cause of such delegation."

SECTION REFERRED TO IN OTHER SECTIONS

This section is referred to in sections 59j-1, 59y, 59bb, 59cc, 59dd, 59ff, 59gg, 59hh, 426p, 1251, 1285, 1288, 1311, 1318, 1319, 1342, 1377, 2104, 2317 of this title; title 42 section 9601.

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APPENDIX E. SECTION 307 OF THE COASTAL ZONE MANAGEMENT ACT

§ 1456. Coordination and cooperation (Section 307)

(a) Federal agencies. In carrying out his functions and responsibilities under this title, the Secretary shall consult with, cooperate with, and, to the maximum extent practicable, coordinate his activities with other interested Federal agencies.

(b) Adequate consideration of views of Federal agencies. The Secretary shall not approve the management program submitted by a state pursuant to section 306 [16 USC § 1455] unless the views of Federal agencies principally affected by such program have been adequately considered.

(c) Consistency of Federal activities with state management programs; certification.

(1) (A) Each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs. A Federal agency activity shall be subject to this paragraph unless it is subject to paragraph (2) or (3).

(B) After any final judgment, decree, or order of any Federal court that is appealable under section 1291 or 1292 of title 28, United States Code, or under any other applicable provision of Federal law, that a specific Federal agency activity is not in compliance with subparagraph (A), and certification by the Secretary that mediation under subsection (h) is not likely to result in such compliance, the President may, upon written request from the Secretary, exempt from compliance those elements of the Federal agency activity that are found by the Federal court to be inconsistent with an approved State program, if the President determines that the activity is in the paramount interest of the United States. No such exemption shall be granted on the basis of a lack of appropriations unless the President has specifically requested such appropriations as part of the budgetary process, and the Congress has failed to make available the requested appropriations.

(C) Each Federal agency carrying out an activity subject to paragraph (1) shall provide a consistency determination to the relevant State agency designated under section 306(d)(6) [16 USC § 1455(d)(6)] at the earliest practicable time, but in no case later than 90 days before final approval of the Federal activity unless both the Federal agency and the State agency agree to a different schedule.

(2) Any Federal agency which shall undertake any development project in the coastal zone of a state shall insure that the project is, to the maximum extent practicable, consistent with the enforceable policies of approved state management programs.

(3) (A) After final approval by the Secretary of a state's management program, any applicant for a required Federal license or permit to conduct an activity, in or outside of the coastal zone, affecting any land or water use or natural resource of the coastal zone of that state shall provide in the application to the licensing or permitting agency a certification that the proposed activity complies with the enforceable policies of the state's approved program and that such activity will be conducted in a manner consistent with the program. At the same time, the applicant shall furnish to the state or its designated agency a copy of the certification, with all necessary information and data. Each coastal state shall establish procedures for public notice in the case of all such certifications and, to the extent it deems appropriate, procedures for public hearings in connection therewith. At the earliest practicable time, the state of its designated agency shall notify the Federal agency concerned that the state concurs with or objects to the applicant's certification. If the state or its designated agency fails to furnish the required notification within six months after receipt of its copy of the applicant's certification, the state's concurrence with the certification shall be conclusively presumed. No license or permit shall be granted by the Federal agency until the state or its designated agency has concurred with the applicant's certification or until, by the state's failure to act, the concurrence is conclusively presumed, unless the Secretary, on his own initiative or upon appeal by the applicant, finds, after

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providing a reasonable opportunity for detailed comments from the Federal agency involved and from the state, that the activity is consistent with the objectives of this title or is otherwise necessary in the interest of national security.

(B) After the management program of any coastal state has been approved by the Secretary under section 306 [16 USC § 1455], any person who submits to the Secretary of the Interior any plan for the exploration or development of, or production from, any area which has been leased under the Outer Continental Shelf Lands Act (43 U.S.C. 1331 et seq.) and regulations under such Act shall, with respect to any exploration, development, or production described in such plan and affecting any land or water use or natural resource of the coastal zone of such state, attach to such plan a certification that each activity which is described in detail in such plan complies with the enforceable policies of such state's approved management program and will be carried out in a manner consistent with such program. No Federal official or agency shall grant such person any license or permit for any activity described in detail in such plan until such state or its designated agency receives a copy of such certification and plan, together with any other necessary data and information, and until--

(i) such state or its designated agency, in accordance with the procedures required to be established by such state pursuant to subparagraph (A), concurs with such person's certification and notifies the Secretary and the Secretary of the Interior of such concurrence;

(ii) concurrence by such state with such certification is conclusively presumed as provided for in subparagraph (A), except if such state fails to concur with or object to such certification within three months after receipt of its copy of such certification and supporting information, such state shall provide the Secretary, the appropriate federal agency, and such person with a written statement describing the status of review and the basis for further delay in issuing a final decision, and if such statement is not so provided, concurrence by such state with such certification shall be conclusively presumed; or

(iii) the Secretary finds, pursuant to subparagraph (A), that each activity which is described in detail in such plan is consistent with the objectives of this title or is otherwise necessary in the interest of national security.

If a state concurs or is conclusively presumed to concur, or if the Secretary makes such a finding, the provisions of subparagraph (A) are not applicable with respect to such person, such state, and any Federal license or permit which is required to conduct any activity affecting land uses or water uses in the coastal zone of such state which is described in detail in the plan to which such concurrence or finding applies. If such state objects to such certification and if the Secretary fails to make a finding under clause (iii) with respect to such certification, or if such person fails substantially to comply with such plan as submitted, such person shall submit an amendment to such plan, or a new plan, to the Secretary of the Interior. With respect to any amendment or new plan submitted to the Secretary of the Interior pursuant to the preceding sentence, the applicable time period for purposes of concurrence by conclusive presumption under subparagraph (A) is 3 months.

(d) Applications of local governments for Federal assistance; relationship of activities with approved management programs. State and local governments submitting applications for Federal assistance under other Federal programs, in or outside of the coastal zone, affecting any land or water use of natural resource of the coastal zone shall indicate the views of the appropriate state or local agency as to the relationship of such activities to the approved management program for the coastal zone. Such applications shall be submitted and coordinated in accordance with the provisions of title IV of the Inter-governmental Coordination Act of 1968 (82 Stat. 1098). Federal agencies shall not approve proposed projects that are inconsistent with the enforceable policies of a coastal state's management program, except upon a finding by the Secretary that such project is consistent with the purposes of this title or necessary in the interest of national security.

(e) Construction with other laws. Nothing in this title shall be construed--

(1) to diminish either Federal or state jurisdiction, responsibility, or rights in the field of planning, development, or control of water resources, submerged lands, or navigable waters; nor to displace, supersede, limit, or modify any

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interstate compact or the jurisdiction or responsibility of any legally established joint or common agency of two or more states or of two or more states and the Federal Government; nor to limit the authority of Congress to authorize and fund projects;

(2) as superseding, modifying, or repealing existing laws applicable to the various Federal agencies; nor to affect the jurisdiction, powers, or prerogatives of the International Joint Commission, United States and Canada, the Permanent Engineering Board, and the United States operating entity or entities established pursuant to the Columbia River Basin Treaty, signed at Washington, January 17, 1961, or the International Boundary and Water Commission, United States and Mexico.

(f) Construction with existing requirements of water and air pollution programs. Notwithstanding any other provision of this title, nothing in this title shall in any way affect any requirement (1) established by the Federal Water Pollution Control Act, as amended, or the Clean Air Act, as amended, or (2) established by the Federal Government or by any state or local government pursuant to such Acts. Such requirements shall be incorporated in any program developed pursuant to this title and shall be the water pollution control and air pollution control requirements applicable to such program.

(g) Concurrence with programs which affect inland areas. When any state's coastal zone management program, submitted for approval or proposed for modification pursuant to section 306 of this title [16 USC § 1455], includes requirements as to shorelands which also would be subject to any Federally supported national land use program which may be hereafter enacted, the Secretary, prior to approving such program, shall obtain the concurrence of the Secretary of the Interior, or such other Federal official as may be designated to administer the national land use program, with respect to that portion of the coastal zone management program affecting such inland areas.

(h) Mediation of disagreements. In case of serious disagreement between any Federal agency and a coastal state--

(1) in the development or the initial implementation of a management program under section 305 [16 USC § 1454]; or

(2) in the administration of a management program approved under section 306 [16 USC § 1455]; the Secretary, with the cooperation of the Executive Office of the President, shall seek to mediate the differences involved in such disagreement. The process of such mediation shall, with respect to any disagreement described in paragraph (2), include public hearings which shall be conducted in the local area concerned.

(i) Federal fee.

(1) With respect to appeals under subsections (c)(3) and (d) which are submitted after the date of the enactment of the Coastal Zone Act Reauthorization Amendments of 1990 [enacted Nov. 5, 1990], the Secretary shall collect an application fee of not less than \$ 200 for minor appeals and not less than \$ 500 for major appeals, unless the Secretary, upon consideration of an applicant's request for a fee waiver, determines that the applicant is unable to pay the fee.

(2) (A) The Secretary shall collect such other fees as are necessary to recover the full costs of administering and processing such appeals under subsection (c).

(B) If the Secretary waives the application fee under paragraph (1) for an applicant, the Secretary shall waive all other fees under this subsection for the applicant.

(3) Fees collected under this subsection shall be deposited into the Coastal Zone Management Fund established under section 308 [16 USC § 1456a].

APPENDIX F. SECTION 7 OF THE ENDANGERED SPECIES ACT

Interagency Cooperation

SEC. 7.

(a) FEDERAL AGENCY ACTIONS AND CONSULTATIONS.-

(1) The Secretary shall review other programs administered by him and utilize such programs in furtherance of the purposes of this Act. All other Federal agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of endangered species and threatened species listed pursuant to section 4 of this Act.

(2) Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.

(3) Subject to such guidelines as the Secretary may establish, a Federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species.

(4) Each Federal agency shall confer with the Secretary on any agency action which is likely to jeopardize the continued existence of any species proposed to be listed under section 4 or result in the destruction or adverse modification of critical habitat proposed to be designated for such species. This paragraph does not require a limitation on the commitment of resources as described in subsection (d).

(b) OPINION OF SECRETARY.-

(1)(A) Consultation under subsection (a)(2) with respect to any agency action shall be concluded within the 90-day period beginning on the date on which initiated or, subject to subparagraph (B), within such other period of time as is mutually agreeable to the Secretary and the Federal agency;

(B) in the case of an agency action involving a permit or license applicant, the Secretary and the Federal agency may not mutually agree to conclude consultation within a period exceeding 90 days unless the Secretary, before the close of the 90th day referred to in subparagraph (A)-

(i) if the consultation period proposed to be agreed to will end before the 150th day after the date on which consultation was initiated, submits to the applicant a written statement setting forth-

(I) the reasons why a longer period is required;

(II) the information that is required to complete the consultation; and

(III) the estimated date on which consultation will be completed; or

(ii) if the consultation period proposed to be agreed to will end 150 or more days after the date on which consultation was initiated, obtains the consent of the applicant to such period. The Secretary and the Federal agency may mutually agree to extend a consultation period established under the preceding sentence if the Secretary, before the close of such period, obtains the consent of the applicant to the extension.

(2) Consultation under subsection (a)(3) shall be concluded within such period as is agreeable to the Secretary, the Federal agency, and the applicant concerned.

(3)(A) Promptly after conclusion of consultation under paragraph (2) or (3) of subsection (a), the Secretary shall provide to the Federal agency and the applicant, if any, a written statement setting forth the Secretary's opinion, and a summary of the information on which the opinion is based, detailing how the agency action affects the species or its critical habitat. If jeopardy or adverse modification is found, the Secretary shall suggest those reasonable and prudent alternatives which he believes would not violate subsection (a)(2) and can be taken by the Federal agency or applicant in implementing the agency action.

(B) Consultation under subsection (a)(3), and an opinion based by the Secretary incident to such consultation, regarding an agency action shall be treated respectively as a consultation under subsection (a)(2), and as an opinion

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issued after consultation under such subsection, regarding that action if the Secretary reviews the action before it is commenced by the Federal agency and finds, and notifies such agency, that no significant changes have been made with respect to the action and that no significant change has occurred regarding the information used during the initial consultation.

(4) If after consultation under subsection (a)(2) of this section, the Secretary concludes that-

(A) the agency action will not violate such subsection, or offers reasonable and prudent alternatives which the Secretary believes would not violate such subsection;

(B) the taking of an endangered species or a threatened species incidental to the agency action will not violate such subsection; and

(C) if an endangered species or threatened species of a marine mammal is involved, the taking is authorized pursuant to section 1371(a)(5) of this title; the Secretary shall provide the Federal agency and the applicant concerned, if any, with a written statement that-

(i) specifies the impact of such incidental taking on the species,

(ii) specifies those reasonable and prudent measures that the Secretary considers necessary or appropriate to minimize such impact,

(iii) in the case of marine mammals, specifies those measures that are necessary to comply with section 1371(a)(5) of this title with regard to such taking, and

(iv) sets forth the terms and conditions (including, but not limited to, reporting requirements) that must be complied with by the Federal agency or applicant (if any), or both, to implement the measures specified under clauses (ii) and (iii).

(c) **BIOLOGICAL ASSESSMENT.**-

(1) To facilitate compliance with the requirements of subsection (a)(2) each Federal agency shall, with respect to any agency action of such agency for which no contract for construction has been entered into and for which no construction has begun on the date of enactment of the Endangered Species Act Amendments of 1978, request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action. If the Secretary advises, based on the best scientific and commercial data available, that such species may be present, such agency shall conduct a biological assessment for the purpose of identifying any endangered species or threatened species which is likely to be affected by such action. Such assessment shall be completed within 180 days after the date on which initiated (or within such other period as is mutually agreed to by the Secretary and such agency, except that if a permit or license applicant is involved, the 180-day period may not be extended unless such agency provides the applicant, before the close of such period, with a written statement setting forth the estimated length of the proposed extension and the reasons therefor) and, before any contract for construction is entered into and before construction is begun with respect to such action. Such assessment may be undertaken as part of a Federal agency's compliance with the requirements of section 102 of the National Environmental Policy Act of 1969 (42 U.S.C. 4332).

(2) Any person who may wish to apply for an exemption under subsection (g) of this section for that action may conduct a biological assessment to identify any endangered species or threatened species which is likely to be affected by such action. Any such biological assessment must, however, be conducted in cooperation with the Secretary and under the supervision of the appropriate Federal agency.

(d) **LIMITATION ON COMMITMENT OF RESOURCES.**-After initiation of consultation required under subsection (a)(2), the Federal agency and the permit or license applicant shall not make any irreversible or irretrievable commitment of resources with respect to the agency action which has the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative measures which would not violate subsection (a)(2).

(e)(1) **ESTABLISHMENT OF COMMITTEE.**-There is established a committee to be known as the Endangered Species Committee (hereinafter in this section referred to as the "Committee").

(2) The Committee shall review any application submitted to it pursuant to this section and determine in accordance with subsection (h) of this section whether or not to grant an exemption from the requirements of subsection (a)(2) of this action for the action set forth in such application.

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- (3) The Committee shall be composed of seven members as follows:
- (A) The Secretary of Agriculture.
 - (B) The Secretary of the Army.
 - (C) The Chairman of the Council of Economic Advisors.
 - (D) The Administrator of the Environmental Protection Agency.
 - (E) The Secretary of the Interior.
 - (F) The Administrator of the National Oceanic and Atmospheric Administration.
 - (G) The President, after consideration of any recommendations received pursuant to subsection (g)(2)(B) shall appoint one individual from each affected State, as determined by the Secretary, to be a member of the Committee for the consideration of the application for exemption for an agency action with respect to which such recommendations are made, not later than 30 days after an application is submitted pursuant to this section.
- (4)(A) Members of the Committee shall receive no additional pay on account of their service on the Committee.
- (B) While away from their homes or regular places of business in the performance of services for the Committee, members of the Committee shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703 of title 5 of the United States Code.
- (5)(A) Five members of the Committee or their representatives shall constitute a quorum for the transaction of any function of the Committee, except that, in no case shall any representative be considered in determining the existence of a quorum for the transaction of any function of the Committee if that function involves a vote by the Committee on any matter before the Committee.
- (B) The Secretary of the Interior shall be the Chairman of the Committee.
- (C) The Committee shall meet at the call of the Chairman or five of its members.
- (D) All meetings and records of the Committee shall be open to the public.
- (6) Upon request of the Committee, the head of any Federal agency is authorized to detail, on a nonreimbursable basis, any of the personnel of such agency to the Committee to assist it in carrying out its duties under this section.
- (7)(A) The Committee may for the purpose of carrying out its duties under this section hold such hearings, sit and act at such times and places, take such testimony, and receive such evidence, as the Committee deems advisable.
- (B) When so authorized by the Committee, any member or agent of the Committee may take any action which the Committee is authorized to take by this paragraph.
- (C) Subject to the Privacy Act, the Committee may secure directly from any Federal agency information necessary to enable it to carry out its duties under this section. Upon request of the Chairman of the Committee, the head of such Federal agency shall furnish such information to the Committee.
- (D) The Committee may use the United States mails in the same manner and upon the same conditions as a Federal agency.
- (E) The Administrator of General Services shall provide to the Committee on a reimbursable basis such administrative support services as the Committee may request.
- (8) In carrying out its duties under this section, the Committee may promulgate and amend such rules, regulations, and procedures, and issue and amend such orders as it deems necessary.
- (9) For the purpose of obtaining information necessary for the consideration of an application for an exemption under this section the Committee may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents.
- (10) In no case shall any representative, including a representative of a member designated pursuant to paragraph (3)(G) of this subsection, be eligible to cast a vote on behalf of any member.

(f) REGULATIONS.-Not later than 90 days after the date of enactment of the Endangered Species Act Amendments of 1978, the Secretary shall promulgate regulations which set forth the form and manner in which applications for exemption shall be submitted to the Secretary and the information to be contained in such applications. Such regulations shall require that information submitted in an application by the head of any Federal agency with respect to any agency action include but not be limited to-

- (1) a description of the consultation process carried out pursuant to subsection (a)(2) of this section between the head of the Federal agency and the Secretary; and

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(2) a statement describing why such action cannot be altered or modified to conform with the requirements of subsection (a)(2) of this section.

(g) APPLICATION FOR EXEMPTION AND REPORT TO THE COMMITTEE

(1) A Federal agency, the Governor of the State in which an agency action will occur, if any, or a permit or license applicant may apply to the Secretary for an exemption for an agency action of such agency if, after consultation under subsection (a)(2), the Secretary's opinion under subsection (b) indicates that the agency action would violate subsection (a)(2). An application for an exemption shall be considered initially by the Secretary in the manner provided for in this subsection, and shall be considered by the Committee for a final determination under subsection (h) after a report is made pursuant to paragraph (5). The applicant for an exemption shall be referred to as the "exemption applicant" in this section.

(2)(A) An exemption applicant shall submit a written application to the Secretary, in a form prescribed under subsection (f), not later than 90 days after the completion of the consultation process; except that, in the case of any agency action involving a permit or license applicant, such application shall be submitted not later than 90 days after the date on which the Federal agency concerned takes final agency action with respect to the issuance of the permit or license. For purposes of the preceding sentence, the term "final agency action" means (i) a disposition by an agency with respect to the issuance of a permit or license that is subject to administrative review, whether or not such disposition is subject to judicial review; or (ii) if administrative review is sought with respect to such disposition, the decision resulting after such review. Such application shall set forth the reasons why the exemption applicant considers that the agency action meets the requirements for an exemption under this subsection.

(B) Upon receipt of an application for exemption for an agency action under paragraph (1), the Secretary shall promptly

(i) notify the Governor of each affected State, if any, as determined by the Secretary, and request the Governors so notified to recommend individuals to be appointed to the Endangered Species Committee for consideration of such application; and

(ii) publish notice of receipt of the application in the Federal Register, including a summary of the information contained in the application and a description of the agency action with respect to which the application for exemption has been filed.

(3) The Secretary shall within 20 days after the receipt of an application for exemption, or within such other period of time as is mutually agreeable to the exemption applicant and the Secretary

(A) determine that the Federal agency concerned and the exemption applicant have-

(i) carried out the consultation responsibilities described in subsection (a) in good faith and made a reasonable and responsible effort to develop and fairly consider modifications or reasonable and prudent alternatives to the proposed agency action which would not violate subsection (a)(2);

(ii) conducted any biological assessment required by subsection (c); and

(iii) to the extent determinable within the time provided herein, refrained from making any irreversible or irretrievable commitment of resources prohibited by subsection (d); or

(B) deny the application for exemption because the Federal agency concerned or the exemption applicant have not met the requirements set forth in subparagraph (A) (i), (ii), and (iii). The denial of an application under subparagraph (B) shall be considered final agency action for purposes of chapter 7 of title 5, United States Code.

(4) If the Secretary determines that the Federal agency concerned and the exemption applicant have met the requirements set forth in paragraph (3)(A) (i), (ii) and (iii) he shall, in consultation with the Members of the Committee, hold a hearing on the application for exemption in accordance with sections 554, 555, and 556 (other than subsection (b) (1) and (2) thereof) of title 5, United States Code, and prepare the report to be submitted pursuant to paragraph (5).

(5) Within 140 days after making the determinations under paragraph (3) or within such other period of time as is mutually agreeable to the exemption applicant and the Secretary, the Secretary shall submit to the Committee a report discussing-

(A) the availability of reasonable and prudent alternatives to the agency action, and the nature and extent of the benefits of the agency action and of alternative courses of action consistent with conserving the species of the critical habitat;

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(B) a summary of the evidence concerning whether or not the agency action is in the public interest and is of national or regional significance;

(C) appropriate reasonable mitigation and enhancement measures which should be considered by the Committee; and

(D) whether the Federal agency concerned and the exemption applicant refrained from making any irreversible or irretrievable commitment of resources prohibited by subsection (d).

(6) To the extent practicable within the time required for action under subsection (g) of this section, and except to the extent inconsistent with the requirements of this section, the consideration of any application for an exemption under this section and the conduct of any hearing under this subsection shall be in accordance with sections 554, 555, and 556 (other than subsection (b)(3) of section 556) of title 5, United States Code.

(7) Upon request of the Secretary, the head of any Federal agency is authorized to detail, on a nonreimbursable basis, any of the personnel of such agency to the Secretary to assist him in carrying out his duties under this section.

(8) All meetings and records resulting from activities pursuant to this subsection shall be open to the public.

(h) EXEMPTION.-

(1) The Committee shall make a final determination whether or not to grant an exemption within 30 days after receiving the report of the Secretary pursuant to subsection (g)(5). The Committee shall grant an exemption from the requirements of subsection (a)(2) for an agency action if, by a vote of not less than five of its members voting in person-

(A) it determines on the record, based on the report of the Secretary, the record of the hearing held under subsection (g)(4), and on such other testimony or evidence as it may receive, that-

(i) there are no reasonable and prudent alternatives to the agency action;

(ii) the benefits of such action clearly outweigh the benefits of alternative courses of action consistent with conserving the species or its critical habitat, and such action is in the public interest;

(iii) the action is of regional or national significance; and

(iv) neither the Federal agency concerned nor the exemption applicant made any irreversible or irretrievable commitment of resources prohibited by subsection (d); and

(B) it establishes such reasonable mitigation and enhancement measures, including, but not limited to, live propagation, transplantation, and habitat acquisition and improvement, as are necessary and appropriate to minimize the adverse effects of the agency action upon the endangered species, threatened species, or critical habitat concerned.

Any final determination by Committee under this subsection shall be considered final agency action for purposes of chapter 7 of title 5 of the United States Code.

(2)(A) Except as provided in subparagraph (B), an exemption for an agency action granted under paragraph (1) shall constitute a permanent exemption with respect to all endangered or threatened species for the purposes of completing such agency action-

(i) regardless whether the species was identified in the biological assessment; and

(ii) only if a biological assessment has been conducted under subsection (c) with respect to such agency action.

(B) An exemption shall be permanent under subparagraph (A) unless-

(i) the Secretary finds, based on the best scientific and commercial data available, that such exemption would result in the extinction of a species that was not the subject of consultation under subsection (a)(2) or was not identified in any biological assessment conducted under subsection (c), and

(ii) the Committee determines within 60 days after the date of the Secretary's finding that the exemption should not be permanent.

If the Secretary makes a finding described in clause (i), the Committee shall meet with respect to the matter within 30 days after the date of the finding.

(i) REVIEW BY SECRETARY OF STATE.-Notwithstanding any other provision of this Act, the Committee shall be prohibited from considering for exemption any application made to it, if the Secretary of State, after a review of the proposed agency action and its potential implications, and after hearing, certifies, in writing, to the Committee within 60 days of any application made under this section that the granting of any such exemption and the carrying out of such action would be in violation of an international treaty obligation or other international obligation of the

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United States. The Secretary of State shall, at the time of such certification, publish a copy thereof in the Federal Register.

(j) Notwithstanding any other provision of this Act, the Committee shall grant an exemption for any agency action if the Secretary of Defense finds that such exemption is necessary for reasons of national security.

(k) **SPECIAL PROVISIONS.**-An exemption decision by the Committee under this section shall not be a major Federal action for purposes of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.): Provided, That an environmental impact statement which discusses the impacts upon endangered species or threatened species or their critical habitats shall have been previously prepared with respect to any agency action exempted by such order.

(l) **COMMITTEE ORDERS.**-

(1) If the Committee determines under subsection (h) that an exemption should be granted with respect to any agency action, the Committee shall issue an order granting the exemption and specifying the mitigation and enhancement measures established pursuant to subsection (h) which shall be carried out and paid for by the exemption applicant in implementing the agency action. All necessary mitigation and enhancement measures shall be authorized prior to the implementing of the agency action and funded concurrently with all other project features.

(2) The applicant receiving such exemption shall include the costs of such mitigation and enhancement measures within the overall costs of continuing the proposed action. Notwithstanding the preceding sentence the costs of such measures shall not be treated as project costs for the purpose of computing benefit-cost or other ratios for the proposed action. Any applicant may request the Secretary to carry out such mitigation and enhancement measures. The costs incurred by the Secretary in carrying out any such measures shall be paid by the applicant receiving the exemption. No later than one year after the granting of an exemption, the exemption applicant shall submit to the Council on Environmental Quality a report describing its compliance with the mitigation and enhancement measures prescribed by this section. Such report shall be submitted annually until all such mitigation and enhancement measures have been completed. Notice of the public availability of such reports shall be published in the Federal Register by the Council on Environmental Quality.

(m) **NOTICE.**-The 60-day notice requirement of section 11(g) of this Act shall not apply with respect to review of any final determination of the Committee under subsection (h) of this section granting an exemption from the requirements of subsection (a)(2) of this section.

(n) **JUDICIAL REVIEW.**-Any person, as defined by section 3(13) of this Act, may obtain judicial review, under chapter 7 of title 5 of the United States Code, of any decision of the Endangered Species Committee under subsection (h) in the United States Court of Appeals for

(1) any circuit wherein the agency action concerned will be, or is being, carried out, or

(2) in any case in which the agency action will be, or is being, carried out outside of any circuit, the District of Columbia, by filing in such court within 90 days after the date of issuance of the decision, a written petition for review. A copy of such petition shall be transmitted by the clerk of the court to the Committee and the Committee shall file in the court the record in the proceeding, as provided in section 2112, of title 28, United States Code. Attorneys designated by the Endangered Species Committee may appear for, and represent the Committee in any action for review under this subsection.

(o) **EXEMPTION AS PROVIDING EXCEPTION ON TAKING OF ENDANGERED SPECIES.**-Notwithstanding sections 1533(d) and 1538(a)(1)(B) and (C) of this title, sections 1371 and 1372 of this title, or any regulation promulgated to implement any such section-

(1) any action for which an exemption is granted under subsection (h) of this section shall not be considered to be a taking of any endangered species or threatened species with respect to any activity which is necessary to carry out such action; and

(2) any taking that is in compliance with the terms and conditions specified in a written statement provided under subsection (b)(4)(iv) of this section shall not be considered to be a prohibited taking of the species concerned.

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(p) EXEMPTIONS IN PRESIDENTIALLY DECLARED DISASTER AREAS. In any area which has been declared by the President to be a major disaster area under the Disaster Relief Act of 1974, the President is authorized to make the determinations required by subsections (g) and (h) of this section for any project for the repair or replacement of a public facility substantially as it existed prior to the disaster under section 401 or 402 of the Disaster Relief Act of 1974, and which the President determines

(1) is necessary to prevent the recurrence of such a natural disaster and to reduce the potential loss of human life, and

(2) to involve an emergency situation which does not allow the ordinary procedures of this section to be followed. Notwithstanding any other provision of this section, the Committee shall accept the determinations of the President under this subsection.

APPENDIX G. SECTION 305 OF THE MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT, AS AMENDED OCTOBER 11, 1996

SEC. 305. OTHER REQUIREMENTS AND AUTHORITY 16 U.S.C. 1855

104-297

(a) GEAR EVALUATION AND NOTIFICATION OF ENTRY.--

(1) Not later than 18 months after the date of enactment of the Sustainable Fisheries Act, the Secretary shall publish in the Federal Register, after notice and an opportunity for public comment, a list of all fisheries--

(A) under the authority of each Council and all fishing gear used in such fisheries, based on information submitted by the Councils under section 303(a); and

(B) to which section 302(a)(3) applies and all fishing gear used in such fisheries.

(2) The Secretary shall include with such list guidelines for determining when fishing gear or a fishery is sufficiently different from those listed as to require notification under paragraph (3).

(3) Effective 180 days after the publication of such list, no person or vessel may employ fishing gear or engage in a fishery not included on such list without giving 90 days advance written notice to the appropriate Council, or the Secretary with respect to a fishery to which section 302(a)(3) applies. A signed return receipt shall serve as adequate evidence of such notice and as the date upon which the 90-day period begins.

(4) A Council may submit to the Secretary any proposed changes to such list or such guidelines the Council deems appropriate. The Secretary shall publish a revised list, after notice and an opportunity for public comment, upon receiving any such proposed changes from a Council.

(5) A Council may request the Secretary to promulgate emergency regulations under subsection (c) to prohibit any persons or vessels from using an unlisted fishing gear or engaging in an unlisted fishery if the appropriate Council, or the Secretary for fisheries to which section 302(a)(3) applies, determines that such unlisted gear or unlisted fishery would compromise the effectiveness of conservation and management efforts under this Act.

(6) Nothing in this subsection shall be construed to permit a person or vessel to engage in fishing or employ fishing gear when such fishing or gear is prohibited or restricted by regulation under a fishery management plan or plan amendment, or under other applicable law.

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(b) FISH HABITAT.--

(1) (A) The Secretary shall, within 6 months of the date of enactment of the Sustainable Fisheries Act, establish by regulation guidelines to assist the Councils in the description and identification of essential fish habitat in fishery management plans (including adverse impacts on such habitat) and in the consideration of actions to ensure the conservation and enhancement of such habitat. The Secretary shall set forth a schedule for the amendment of fishery management plans to include the identification of essential fish habitat and for the review and updating of such identifications based on new scientific evidence or other relevant information.

(B) The Secretary, in consultation with participants in the fishery, shall provide each Council with recommendations and information regarding each fishery under that Council's authority to assist it in the identification of essential fish

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habitat, the adverse impacts on that habitat, and the actions that should be considered to ensure the conservation and enhancement of that habitat.

(C) The Secretary shall review programs administered by the Department of Commerce and ensure that any relevant programs further the conservation and enhancement of essential fish habitat.

(D) The Secretary shall coordinate with and provide information to other Federal agencies to further the conservation and enhancement of essential fish habitat.

(2) Each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any essential fish habitat identified under this Act.

(3) Each Council--

(A) may comment on and make recommendations to the Secretary and any Federal or State agency concerning any activity authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any Federal or State agency that, in the view of the Council, may affect the habitat, including essential fish habitat, of a fishery resource under its authority; and

(B) shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority.

(4) (A) If the Secretary receives information from a Council or Federal or State agency or determines from other sources that an action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by any State or Federal agency would adversely affect any essential fish habitat identified under this Act, the Secretary shall recommend to such agency measures that can be taken by such agency to conserve such habitat.

(B) Within 30 days after receiving a recommendation under subparagraph (A), a Federal agency shall provide a detailed response in writing to any Council commenting under paragraph (3) and the Secretary regarding the matter. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on such habitat. In the case of a response that is inconsistent with the recommendations of the Secretary, the Federal agency shall explain its reasons for not following the recommendations.

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(c) EMERGENCY ACTIONS AND INTERIM MEASURES.--

(1) If the Secretary finds that an emergency or overfishing exists or that interim measures are needed to reduce overfishing for any fishery, he may promulgate emergency⁴ regulations or interim measures necessary to address the emergency or overfishing, without regard to whether a fishery management plan exists for such fishery.

(2) If a Council finds that an emergency or overfishing exists or that interim measures are needed to reduce overfishing for any fishery within its jurisdiction, whether or not a fishery management plan exists for such fishery--

(A) the Secretary shall promulgate emergency⁴ regulations or interim measures under paragraph (1) to address the emergency or overfishing if the Council, by unanimous vote of the members who are voting members, requests the taking of such actions; and

(B) the Secretary may promulgate emergency⁴ regulations or interim measures under paragraph (1) to address the emergency or overfishing if the Council, by less than a unanimous vote, requests the taking of such action.

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(3) Any emergency regulation or interim measure which changes any existing fishery management plan or amendment shall be treated as an amendment to such plan for the period in which such regulation is in effect. Any emergency regulation or interim measure promulgated under this subsection--

(A) shall be published in the Federal Register together with the reasons therefor;

(B) shall, except as provided in subparagraph (C), remain in effect for not more than 180 days after the date of publication, and may be extended by publication in the Federal Register for one additional period of not more than 180 days, provided the public has had an opportunity to comment on the emergency regulation or interim measure, and, in the case of a Council recommendation for emergency regulations or interim measures, the Council is actively preparing a fishery management plan, plan amendment, or proposed regulations to address the emergency or overfishing on a permanent basis;

(C) that responds to a public health emergency or an oil spill may remain in effect until the circumstances that created the emergency no longer exist, *Provided*, That the public has an opportunity to comment after the regulation is published, and, in the case of a public health emergency, the Secretary of Health and Human Services concurs with the Secretary's action; and

(D) may be terminated by the Secretary at an earlier date by publication in the Federal Register of a notice of termination, except for emergency regulations or interim measures^[5] promulgated under paragraph (2) in which case such early termination may be made only upon the agreement of the Secretary and the Council concerned.

101-627

(d) RESPONSIBILITY OF THE SECRETARY.--The Secretary shall have general responsibility to carry out any fishery management plan or amendment approved or prepared by him, in accordance with the provisions of this Act. The Secretary may promulgate such regulations, in accordance with section 553 of title 5, United States Code, as may be necessary to discharge such responsibility or to carry out any other provision of this Act.

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(e) EFFECT OF CERTAIN LAWS ON CERTAIN TIME REQUIREMENTS.--

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.), the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), and Executive Order Numbered 12866, dated September 30, 1993, shall be complied with within the time limitations specified in subsections (a), (b), and (c) of section 304 as they apply to the functions of the Secretary under such provisions.

101-627

(f) JUDICIAL REVIEW.--

(1) Regulations promulgated by the Secretary under this Act and actions described in paragraph (2) shall be subject to judicial review to the extent authorized by, and in accordance with, chapter 7 of title 5, United States Code, if a petition for such review is filed within 30 days after the date on which the regulations are promulgated or the action is published in the Federal Register, as applicable; except that--

(A) section 705 of such title is not applicable, and

(B) the appropriate court shall only set aside any such regulation or action on a ground specified in section 706(2)(A), (B), (C), or (D) of such title.

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(2) The actions referred to in paragraph (1) are actions that are taken by the Secretary under regulations which implement a fishery management plan, including but not limited to actions that establish the date of closure of a fishery to commercial or recreational fishing.

(3) (A) Notwithstanding any other provision of law, the Secretary shall file a response to any petition filed in accordance with paragraph (1), not later than 45 days after the date the Secretary is served with that petition, except that the appropriate court may extend the period for filing such a response upon a showing by the Secretary of good cause for that extension.

(B) A response of the Secretary under this paragraph shall include a copy of the administrative record for the regulations that are the subject of the petition.

(4) Upon a motion by the person who files a petition under this subsection, the appropriate court shall assign the matter for hearing at the earliest possible date and shall expedite the matter in every possible way.

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(g) NEGOTIATED CONSERVATION AND MANAGEMENT MEASURES.--

(1)(A) In accordance with regulations promulgated by the Secretary pursuant to this paragraph, a Council may establish a fishery negotiation panel to assist in the development of specific conservation and management measures for a fishery under its authority. The Secretary may establish a fishery negotiation panel to assist in the development of specific conservation and management measures required for a fishery under section 304(e)(5), for a fishery for which the Secretary has authority under section 304(g), or for any other fishery with the approval of the appropriate Council.

(B) No later than 180 days after the date of enactment of the Sustainable Fisheries Act, the Secretary shall promulgate regulations establishing procedures, developed in cooperation with the Administrative Conference of the United States, for the establishment and operation of fishery negotiation panels. Such procedures shall be comparable to the procedures for negotiated rulemaking established by subchapter III of chapter 5 of title 5, United States Code.

(2) If a negotiation panel submits a report, such report shall specify all the areas where consensus was reached by the panel, including, if appropriate, proposed conservation and management measures, as well as any other information submitted by members of the negotiation panel. Upon receipt, the Secretary shall publish such report in the Federal Register for public comment.

(3) Nothing in this subsection shall be construed to require either a Council or the Secretary, whichever is appropriate, to use all or any portion of a report from a negotiation panel established under this subsection in the development of specific conservation and management measures for the fishery for which the panel was established.

104-297

(h) CENTRAL REGISTRY SYSTEM FOR LIMITED ACCESS SYSTEM PERMITS.--

(1) Within 6 months after the date of enactment of the Sustainable Fisheries Act, the Secretary shall establish an exclusive central registry system (which may be administered on a regional basis) for limited access system permits established under section 303(b)(6) or other Federal law, including individual fishing quotas, which shall provide for the registration of title to, and interests in, such permits, as well as for procedures for changes in the registration of title to such permits upon the occurrence of involuntary transfers, judicial or nonjudicial foreclosure of interests, enforcement of judgments thereon, and related matters deemed appropriate by the Secretary. Such registry system shall--

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(A) provide a mechanism for filing notice of a nonjudicial foreclosure or enforcement of a judgment by which the holder of a senior security interest acquires or conveys ownership of a permit, and in the event of a nonjudicial foreclosure, by which the interests of the holders of junior security interests are released when the permit is transferred;

(B) provide for public access to the information filed under such system, notwithstanding section 402(b); and

(C) provide such notice and other requirements of applicable law that the Secretary deems necessary for an effective registry system.

(2) The Secretary shall promulgate such regulations as may be necessary to carry out this subsection, after consulting with the Councils and providing an opportunity for public comment. The Secretary is authorized to contract with non-Federal entities to administer the central registry system.

(3) To be effective and perfected against any person except the transferor, its heirs and devisees, and persons having actual notice thereof, all security interests, and all sales and other transfers of permits described in paragraph (1), shall be registered in compliance with the regulations promulgated under paragraph (2). Such registration shall constitute the exclusive means of perfection of title to, and security interests in, such permits, except for Federal tax liens thereon, which shall be perfected exclusively in accordance with the Internal Revenue Code of 1986 (26 U.S.C. 1 et seq.). The Secretary shall notify both the buyer and seller of a permit if a lien has been filed by the Secretary of the Treasury against the permit before collecting any transfer fee under paragraph (5) of this subsection.

(4) The priority of security interests shall be determined in order of filing, the first filed having the highest priority. A validly-filed security interest shall remain valid and perfected notwithstanding a change in residence or place of business of the owner of record. For the purposes of this subsection, "security interest" shall include security interests, assignments, liens and other encumbrances of whatever kind.

(5) (A) Notwithstanding section 304(d)(1), the Secretary shall collect a reasonable fee of not more than one-half of one percent of the value of a limited access system permit upon registration of the title to such permit with the central registry system and upon the transfer of such registered title. Any such fee collected shall be deposited in the Limited Access System Administration Fund established under subparagraph (B).

(B) There is established in the Treasury a Limited Access System Administration Fund. The Fund shall be available, without appropriation or fiscal year limitation, only to the Secretary for the purposes of--

(i) administering the central registry system; and

(ii) administering and implementing this Act in the fishery in which the fees were collected. Sums in the Fund that are not currently needed for these purposes shall be kept on deposit or invested in obligations of, or guaranteed by, the United States.

104-297

(i) ALASKA AND WESTERN PACIFIC COMMUNITY DEVELOPMENT PROGRAMS.--

(1) (A) The North Pacific Council and the Secretary shall establish a western Alaska community development quota program under which a percentage of the total allowable catch of any Bering Sea fishery is allocated to the program.

(B) To be eligible to participate in the western Alaska community development quota program under subparagraph (A) a community shall--

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(i) be located within 50 nautical miles from the baseline from which the breadth of the territorial sea is measured along the Bering Sea coast from the Bering Strait to the western most of the Aleutian Islands, or on an island within the Bering Sea;

(ii) not be located on the Gulf of Alaska coast of the north Pacific Ocean;

(iii) meet criteria developed by the Governor of Alaska, approved by the Secretary, and published in the Federal Register;

(iv) be certified by the Secretary of the Interior pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601 et seq.) to be a Native village;

(v) consist of residents who conduct more than one-half of their current commercial or subsistence fishing effort in the waters of the Bering Sea or waters surrounding the Aleutian Islands; and

(vi) not have previously developed harvesting or processing capability sufficient to support substantial participation in the groundfish fisheries in the Bering Sea, unless the community can show that the benefits from an approved Community Development Plan would be the only way for the community to realize a return from previous investments.

(C) (i) Prior to October 1, 2001, the North Pacific Council may not submit to the Secretary any fishery management plan, plan amendment, or regulation that allocates to the western Alaska community development quota program a percentage of the total allowable catch of any Bering Sea fishery for which, prior to October 1, 1995, the Council had not approved a percentage of the total allowable catch for allocation to such community development quota program. The expiration of any plan, amendment, or regulation that meets the requirements of clause (ii) prior to October 1, 2001, shall not be construed to prohibit the Council from submitting a revision or extension of such plan, amendment, or regulation to the Secretary if such revision or extension complies with the other requirements of this paragraph.

(ii) With respect to a fishery management plan, plan amendment, or regulation for a Bering Sea fishery that--

(I) allocates to the western Alaska community development quota program a percentage of the total allowable catch of such fishery; and

(II) was approved by the North Pacific Council prior to October 1, 1995; the Secretary shall, except as provided in clause (iii) and after approval of such plan, amendment, or regulation under section 304, allocate to the program the percentage of the total allowable catch described in such plan, amendment, or regulation. Prior to October 1, 2001, the percentage submitted by the Council and approved by the Secretary for any such plan, amendment, or regulation shall be no greater than the percentage approved by the Council for such fishery prior to October 1, 1995.

(iii) The Secretary shall phase in the percentage for community development quotas approved in 1995 by the North Pacific Council for the Bering Sea crab fisheries as follows:

(I) 3.5 percent of the total allowable catch of each such fishery for 1998 shall be allocated to the western Alaska community development quota program;

(II) 5 percent of the total allowable catch of each such fishery for 1999 shall be allocated to the western Alaska community development quota program; and

(III) 7.5 percent of the total allowable catch of each such fishery for 2000 and thereafter shall be allocated to the western Alaska community development quota program, unless the North Pacific Council submits and the Secretary approves a percentage that is no greater than 7.5 percent of the total allowable catch of each such fishery for 2001 or the North Pacific Council submits and the Secretary approves any other percentage on or after October 1, 2001.

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(D) This paragraph shall not be construed to require the North Pacific Council to resubmit, or the Secretary to reapprove, any fishery management plan or plan amendment approved by the North Pacific Council prior to October 1, 1995, that includes a community development quota program, or any regulations to implement such plan or amendment.

(2) (A) The Western Pacific Council and the Secretary may establish a western Pacific community development program for any fishery under the authority of such Council in order to provide access to such fishery for western Pacific communities that participate in the program.

(B) To be eligible to participate in the western Pacific community development program, a community shall--

(i) be located within the Western Pacific Regional Fishery Management Area;

(ii) meet criteria developed by the Western Pacific Council, approved by the Secretary and published in the Federal Register;

(iii) consist of community residents who are descended from the aboriginal people indigenous to the area who conducted commercial or subsistence fishing using traditional fishing practices in the waters of the Western Pacific region;

(iv) not have previously developed harvesting or processing capability sufficient to support substantial participation in fisheries in the Western Pacific Regional Fishery Management Area; and

(v) develop and submit a Community Development Plan to the Western Pacific Council and the Secretary.

(C) In developing the criteria for eligible communities under subparagraph (B)(ii), the Western Pacific Council shall base such criteria on traditional fishing practices in or dependence on the fishery, the cultural and social framework relevant to the fishery, and economic barriers to access to the fishery.

(D) For the purposes of this subsection "Western Pacific Regional Fishery Management Area" means the area under the jurisdiction of the Western Pacific Council, or an island within such area.

(E) Notwithstanding any other provision of this Act, the Western Pacific Council shall take into account traditional indigenous fishing practices in preparing any fishery management plan.

(3) The Secretary shall deduct from any fees collected from a community development quota program under section 304(d)(2) the costs incurred by participants in the program for observer and reporting requirements which are in addition to observer and reporting requirements of other participants in the fishery in which the allocation to such program has been made.

(4) After the date of enactment of the Sustainable Fisheries Act, the North Pacific Council and Western Pacific Council may not submit to the Secretary a community development quota program that is not in compliance with this subsection.

104-297, sec. 110(e), M-S Act SS 305 note

REGISTRY TRANSITION.--Security interests on permits described under section 305(h)(1) of the Magnuson Fishery Conservation and Management Act, as amended by this Act [104-297], that are effective and perfected by otherwise applicable law on the date of the final regulations implementing section 305(h) shall remain effective and perfected if, within 120 days after such date, the secured party submits evidence satisfactory to the Secretary of Commerce and in compliance with such regulations of the perfection of such security.

104-297, sec. 111(b), M-S Act SS 305 note

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WESTERN PACIFIC DEMONSTRATION PROJECTS.--

(1) The Secretary of Commerce and the Secretary of the Interior are authorized to make direct grants to eligible western Pacific communities, as recommended by the Western Pacific Fishery Management Council, for the purpose of establishing not less than three and not more than five fishery demonstration projects to foster and promote traditional indigenous fishing practices. The total amount of grants awarded under this subsection shall not exceed \$500,000 in each fiscal year.

(2) Demonstration projects funded pursuant to this subsection shall foster and promote the involvement of western Pacific communities in western Pacific fisheries and may--

(A) identify and apply traditional indigenous fishing practices;

(B) develop or enhance western Pacific community-based fishing opportunities; and

(C) involve research, community education, or the acquisition of materials and equipment necessary to carry out any such demonstration project.

(3)(A) The Western Pacific Fishery Management Council, in consultation with the Secretary of Commerce, shall establish an advisory panel under section 302(g) of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1852(g)) to evaluate, determine the relative merits of, and annually rank applications for such grants. The panel shall consist of not more than 8 individuals who are knowledgeable or experienced in traditional indigenous fishery practices of western Pacific communities and who are not members or employees of the Western Pacific Fishery Management Council.

(B) If the Secretary of Commerce or the Secretary of the Interior awards a grant for a demonstration project not in accordance with the rank given to such project by the advisory panel, the Secretary shall provide a detailed written explanation of the reasons therefor.

(4) The Western Pacific Fishery Management Council shall, with the assistance of such advisory panel, submit an annual report to the Congress assessing the status and progress of demonstration projects carried out under this subsection.

(5) Appropriate Federal agencies may provide technical assistance to western Pacific community-based entities to assist in carrying out demonstration projects under this subsection.

(6) For the purposes of this subsection, "western Pacific community" shall mean a community eligible to participate under section 305(i)(2)(B) of the Magnuson Fishery Conservation and Management Act, as amended by this Act.

APPENDIX H. EXECUTIVE ORDER 12898: FEDERAL ACTIONS TO ADDRESS ENVIRONMENTAL JUSTICE IN MINORITY POPULATIONS AND LOW-INCOME POPULATIONS

By the authority vested in me as President by the Constitution and the laws of the United States of America, it is hereby ordered as follows:

Section 1-1. Implementation.

1-101. Agency Responsibilities. To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

1-102. Creation of an Interagency Working Group on Environmental Justice. (a) Within 3 months of the date of this order, the Administrator of the Environmental Protection Agency ("Administrator") or the Administrator's designee shall convene an interagency Federal Working Group on Environmental Justice ("Working Group"). The Working Group shall comprise the heads of the following executive agencies and offices, or their designees: (a) Department of Defense; (b) Department of Health and Human Services; (c) Department of Housing and Urban Development; (d) Department of Labor; (e) Department of Agriculture; (f) Department of Transportation; (g) Department of Justice; (h) Department of the Interior; (i) Department of Commerce; (j) Department of Energy; (k) Environmental Protection Agency; (l) Office of Management and Budget; (m) Office of Science and Technology Policy; (n) Office of the Deputy Assistant to the President for Environmental Policy; (o) Office of the Assistant to the President for Domestic Policy; (p) National Economic Council; (q) Council of Economic Advisers; and (r) other such Government officials as the President may designate. The Working Group shall report to the President through the Deputy through the Deputy Assistant to the President for Environmental Policy and the Assistant to the President for Domestic Policy.

(b) The Working Group shall: (1) provide guidance to Federal agencies on criteria for identifying disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

(2) coordinate with, provide guidance to, and serve as a clearinghouse for, each Federal agency as it develops an environmental justice strategy as required by section 1-103 of this order, in order to ensure that the administration, interpretation and enforcement of programs, activities and policies are undertaken in a consistent manner;

(3) assist in coordinating research by, and stimulating cooperation among, the Environmental Protection Agency, the Department of Health and Human Services, the Department of Housing and Urban Development, and other agencies conducting research or other activities in accordance with section 3-3 of this order;

(4) assist in coordinating data collection, required by this order;

(5) examine existing data and studies on environmental justice;

(6) hold public meetings as required in section 5-502(d) of this order; and

(7) develop interagency model projects on environmental justice that evidence cooperation among Federal agencies.

1-103. Development of Agency Strategies. (a) Except as provided in section 6-605 of this order, each Federal agency shall develop an agency-wide environmental justice strategy, as set forth in subsections (b)-(e) of this section that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, or activities on minority populations and low-income populations. The environmental justice

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strategy shall list programs, policies, planning and public participation practices, enforcement and/or rulemakings related to human health or the environment that should be revised to, at a minimum: (1) promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations; (2) ensure greater public participation; (3) improve research and data collection relating to the health of and environment of minority populations and low-income populations; and (4) identify differential patterns of consumption of natural resources among minority populations and low-income populations. In addition, the environmental justice strategy shall include, where appropriate, a timetable for undertaking identified revisions and consideration of economic and social implications of the revisions.

(b) Within 4 months of the date of this order, each Federal agency shall identify an internal administrative process for developing its environmental justice strategy, and shall inform the Working Group of the process.

(c) Within 6 months of the date of this order, each Federal agency shall provide the Working Group with an outline of its proposed environmental justice strategy.

(d) Within 10 months of the date of this order, each Federal agency shall provide the Working Group with its proposed environmental justice strategy.

(e) Within 12 months of the date of this order, each Federal agency shall finalize its environmental justice strategy and provide a copy and written description of its strategy to the Working Group. During the 12-month period from the date of this order, each Federal agency, as part of its environmental justice strategy, shall identify several specific projects that can be promptly undertaken to address particular concerns identified during the development of the proposed environmental justice strategy, and a schedule for implementing those projects.

(f) Within 24 months of the date of this order, each Federal agency shall report to the Working Group on its progress in implementing its agency-wide environmental justice strategy.

(g) Federal agencies shall provide additional periodic reports to the Working Group.

1-104. Reports to the President. Within 14 months of the date of this order, the Working Group shall submit to the President, through the Office of the Deputy Assistant to the President for Environmental Policy and the Office of the Assistant to the President for Domestic Policy, a report that describes the implementation of this order, and includes the final environmental justice strategies described in section 1-103(e) of this order.

Sec. 2-2. Federal Agency Responsibilities for Federal Programs.

Each Federal agency shall conduct its programs, policies, and activities that substantially effect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, or national origin.

Sec. 3-3. Research, Data Collection, and Analysis.

3-301. Human Health and Environmental Research and Analysis. (a) Environmental human health research, whenever practicable and appropriate, shall include diverse segments of the population in epidemiological and clinical studies, including segments at high risk from environmental hazards, such as minority populations, low-income populations and workers who may be exposed to substantial environmental hazards.

(b) Environmental human health analyses, whenever practicable and appropriate, shall identify multiple and cumulative exposures.

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(c) Federal agencies shall provide minority populations and low-income populations the opportunity to comment on the development and design of research strategies undertaken pursuant to this order.

3-302. Human Health and Environmental Data Collection and Analysis. To the extent permitted by existing law, including the Privacy Act, as amended (5 U.S.C. section 552a): (a) each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information assessing and comparing environmental and human health risks borne by populations identified by race, national origin, or income. To the extent practicable and appropriate, Federal agencies shall use this information to determine whether their programs, policies, and activities have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.

(b) In connection with the development and implementation of agency strategies in section 1-103 of this order, each Federal agency, whenever practicable and appropriate, shall collect, maintain and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding facilities or sites expected to have a substantial environmental, human health, or economic effect on the surrounding populations, when such facilities or sites become the subject of a substantial Federal environmental administrative or judicial action. Such information shall be made available to the public, unless prohibited by law: and

(c) Each Federal agency, whenever practicable and appropriate, shall collect, maintain, and analyze information on the race, national origin, income level, and other readily accessible and appropriate information for areas surrounding Federal facilities that are: (1) subject to the reporting requirements under the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. section 11001-11050 as mandated in Executive Order No. 12856; and (2) expected to have a substantial environmental, human health, or economic effect on surrounding populations.

(d) In carrying out the responsibilities in this section, each Federal agency, whenever practicable and appropriate, shall share information and eliminate unnecessary duplication of efforts through the use of existing data systems and cooperative agreements among Federal agencies and with States, local, and tribal governments.

Sec. 4-4. Subsistence Consumption of Fish and Wildlife.

4-401. Consumption Patterns. In order to assist in identifying the need for ensuring protection of populations with differential patterns of subsistence consumption of fish and wildlife, Federal agencies, whenever practicable and appropriate, shall collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. Federal agencies shall communicate to the public the risk of those consumption patterns.

4-402. Guidance. Federal agencies, whenever practicable and appropriate, shall work in a coordinated manner to publish guidance reflecting the latest scientific information available concerning methods for evaluating the human health risks associated with the consumption of pollutant-bearing fish or wildlife. Agencies shall consider such guidance in developing their policies and rules.

Sec. 5-5. Public Participation and Access to Information. (a) The public may submit recommendations to Federal agencies relating to the incorporation of environmental justice principles into Federal agency programs or policies. Each Federal agency shall convey such recommendations to the Working Group.

(b) Each Federal agency may, whenever practicable and appropriate, translate crucial public documents, notices and hearings relating to human health or the environment for limited English-speaking populations.

(c) Each Federal agency shall work to ensure that public documents, notices, and hearings relating to human health or the environment are concise, understandable, and readily accessible to the public.

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(d) The Working Group shall hold public meetings, as appropriate, for the purpose of fact-finding, receiving public comments, and conducting inquiries concerning environmental justice. The Working Group shall prepare for public review a summary of the contents and recommendations discussed at the public meetings.

Sec. 6-6. General Provisions.

6-601. Responsibility for Agency Implementation. The head of each Federal agency shall be responsible for ensuring compliance with this order. Each Federal agency shall conduct internal reviews and take such other steps as may be necessary to monitor compliance with this order.

6-602. Executive Order No. 12250. This Executive Order is intended to supplement but not supersede Executive Order No. 12250, which requires consistent and effective implementation of various laws prohibiting discriminatory practices in programs receiving Federal financial assistance. Nothing herein shall limit the effect or mandate of Executive Order No. 12250.

6-603. Executive Order No. 12875. This Executive Order is not intended to limit the effect or mandate of Executive Order No. 12875.

6-604. Scope. For the purposes of this order, Federal agency means any agency on the Working Group, and such other agencies as may be designated by the President, that conducts any Federal program or activity that substantially affects human health or the environment. Independent agencies are requested to comply with the provisions of this order.

6-605. Petitions for Exemptions. The head of a Federal agency may petition the President for an exemption from the requirements of this order on the grounds that all or some of the petitioning agency's programs or activities should not be subject to the requirements of this order.

6-606. Native American Programs. Each Federal agency responsibility set forth under this order shall apply equally to Native American programs. In addition, the Department of the Interior, in coordination with the Working Group, and after consultation with tribal leaders, shall coordinate steps to be taken pursuant to this order that address Federally-recognized Indian tribes.

6-607. Costs. Unless otherwise provided by law, Federal agencies shall assume the financial costs of complying with this order.

6-608. General. Federal agencies shall implement this order consistent with, and to the extent permitted by, existing law.

6-609. Judicial Review. This order is intended only to improve the internal management of the executive branch and is not intended to, nor does it create any right, benefit, or trust responsibility, substantive or procedural, enforceable at law or equity by a party against the United States, its agencies, its officers, or any person. This order shall not be construed to create any right to judicial review involving the compliance or noncompliance of the United States, its agencies, its officers, or any other person with this order.

WILLIAM J. CLINTON
THE WHITE HOUSE
February 11, 1994.

APPENDIX I. AGREEMENT FOR THE COORDINATION OF CIVIL CLAIMS

(Between NOAA and the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida)
Agreement for the Coordination of Civil Claims

I. Purpose and Scope

The Governor and Cabinet of the State of Florida, acting as the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida (State of Florida), and the National Oceanic and Atmospheric Administration of the U. S. Department of Commerce (NOAA) (collectively, the Co-Trustees) are committed to cooperation in the protection, restoration and management of resources of the Florida Keys National Marine Sanctuary (the Sanctuary) established on November 16, 1990 by P.L. 101-605. This Memorandum of Agreement (MOA) provides for cooperation and coordination among the Co-Trustees with respect to civil claims for response costs or damages based on injury to Sanctuary resources.

II. Authorities

NOAA enters into this MOA pursuant to the Florida Keys National Marine Sanctuary and Protection Act (Florida Keys Act), 16 U.S.C. 1433 note, P.L. 101-605, and the National Marine Sanctuaries Act, 16 U.S.C. 1431 et. seq.

The State of Florida derives its authority from Article II, Section 7, and Article X, Section 11, of the Florida Constitution. Pursuant to these Sections of the Florida Constitution and under Chapter 253 of the Florida Statutes, the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida holds title to State lands, including State sovereign submerged lands, for the use and benefit of the citizens of the State of Florida and is charged with the duty to conserve and protect the natural resources and beauty associated with such State lands.

This MOA does not delegate, transfer, or affect the ownership by or authority of either NOAA or the State of Florida.

III. Definitions

The following definitions apply to terms used in this MOA.

Assessment costs - means the costs of all actions which NOAA or the State of Florida may undertake to investigate and document any injury to Sanctuary resources and to assess any damages due thereon, including the development of plans to restore, replace or acquire equivalent Sanctuary Resources.

Civil claims - means claims for response costs and damages arising under Section 312 of the National Marine Sanctuaries Act or under authorities supporting state claims against any person who threatens or injures Sanctuary resources. Claims arising under Section 312 include forfeiture actions under Section 307 of the Sanctuaries Act only where the circumstances giving rise to such actions are based on claims asserted under Section 312.

Comprehensive Management Plan - means the plan developed by the Secretary of Commerce which becomes finally effective for the Sanctuary, pursuant to the provisions of the Florida Keys Act and the National Marine Sanctuaries Act, including all provisions therein for coordination and cooperation between Sanctuary managers and other Federal, State and local authorities with jurisdiction within or adjacent to the Sanctuary.

Existing Management Area - for the purposes of this MOA, means a portion of the Sanctuary that is within an existing resource management area established by NOAA or by another Federal, State, or local authority of

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competent jurisdiction within the Sanctuary including but not limited to the areas as identified in Appendix II to 15 C.F.R Part 922.

Injury - means an adverse change in a chemical, biological, or physical attribute, or in the viability of, a Sanctuary resource, either in the long or short term. Injury includes the loss of and the destruction of Sanctuary resources.

Response costs - means the costs of all necessary actions, including, e.g., salvage and clean-up, which NOAA or the State of Florida may undertake to prevent or minimize the injury to Sanctuary resources, or to minimize the imminent risk of such injury.

Restoration or restore - means actions which are planned or undertaken by NOAA or the State of Florida to restore, replace or acquire the equivalent of injured Sanctuary resources.

Sanctuary - means the Florida Keys National Marine Sanctuary, as described in Section 5 of the Florida Keys Act.

Sanctuary resource - means any living or non-living resource of the Sanctuary that contributes to the conservation, recreational, ecological, historical, research, educational and aesthetic value of the Sanctuary.

State claims - means civil claims of the State of Florida and its agencies for response costs and damages against any person who threatens or causes injury to Sanctuary resources in State waters or involving State lands. Such claims may be based on federal or State law, whether statutory or common law. Such authorities include but are not limited to the State laws which are summarized in Volume III, Appendix C, pages C-6 through C-12 of the Comprehensive Management Plan for the Sanctuary.

IV. Statement of Objectives

The Co-Trustees have the following general objectives with respect to civil claims within the scope of this MOA:

1. To recover response costs and assessment costs incurred by NOAA and the State of Florida in addressing threats and injuries to Sanctuary resources;
2. To restore Sanctuary resources as expeditiously as possible following their injury;
3. To cooperatively assess such injuries and any damages due thereon in a prompt and reliable manner, including the development of plans to restore Sanctuary resources;
4. To employ assessment strategies and methods which are appropriate considering the nature and scope of the specific resource injury, the nature of the incident resulting in the injury, the opportunities for basing compensation on resource restoration activities, technical accuracy, feasibility and cost-effectiveness.
5. To avoid unnecessary duplication in State and Federal efforts, and to ensure claims have a reasonable likelihood of success on their merits.

This MOA provides guidance and a framework for timely consultation and coordination between Co-Trustee representatives in order to achieve these objectives.

V. Initial Notification, Response, and General Coordination

Notification and Response - The Co-Trustees recognize that coordination in matters related to civil claims is facilitated by effective initial notification procedures and early coordination of operational activities undertaken to address threats or injuries to Sanctuary resources. These goals have been codified in the "Protocol for Emergency Response Notification" (Response Protocol), entered into and agreed upon by the Co-Trustees. Operational

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Components of the Response Protocol will be subsequently developed and entered into by NOAA and the State. The procedures identified in the Response Protocol and operational components thereof will provide the foundation for the earliest coordination on matters related to civil claims within the scope of the present MOA. Current documentation of the Response Protocol and the operational components thereof shall be maintained in Sanctuary field offices.

General Coordination - The objectives of this MOA will also require on-going coordination between NOAA and the State of Florida to address issues or problems which recur in connection with common or frequent injuries to Sanctuary resources or which may otherwise have a general bearing on civil claims within the scope of this MOA. NOAA and the State will be responsible for initiating such consultations, meetings or other general coordination practices which they determine necessary to ensure appropriate NOAA and State personnel cooperatively address these matters in a timely fashion and to preplan or initiate any other activity necessary to implement the level of coordination contemplated by this MOA. The following are examples of matters which are intended for future coordination under this section:

1. Development of an Environmental Impact Statement (EIS) for Restoration of Coral Reef and Seagrass Habitats within the Sanctuary - These documents will evaluate current alternatives and identify the best options for restoration of these important habitats in the Sanctuary. This document is intended to provide the framework for restoration planning for the vast majority of sanctuary resource injuries which may occur.

2. Development of standard field, analytical and presentation protocols for assessing ecological injuries to coral reef and other FKNMS habitats - The identification and implementation of reliable assessment procedures in a uniform fashion will ensure litigation-quality assessments, facilitate cooperative and cost-effective assessments, facilitate efficient use of limited State and Federal assessment personnel and resources and promote consistency between Co-Trustee claims.

3. Development of a compensation table, formula, or other simplified procedure(s) for assessing restoration-based damages - Simplified assessment procedures are needed to support claims and fund restoration actions to address the smaller Sanctuary resource injury scenarios which are frequent in the Sanctuary, particularly in the State water areas.

4. Development of standard protocols for tracking and documentation of response and assessment costs incurred by Federal and State Sanctuary personnel - Well defined costs documentation procedures will ensure that all response and assessment costs incurred by the Co-Trustees are documented and are recoverable.

VI. Protocols for Coordination Relating to Civil Claims

Incident Screening - For every incident of threat or injury to Sanctuary resources, NOAA and the State shall review the readily available information and make a threshold determination as to whether emergency restoration actions may be required and/or whether costs incurred or apparent injuries to Sanctuary resources may be sufficient to warrant pursuing civil claims for damages under Section 312 and/or State authority as defined herein. NOAA and the State may develop a set of agreed criteria for use to aid them in making this determination. In the event emergency restoration may be necessary or costs and/or injuries are deemed sufficient to warrant actions to seek reimbursement or damages, NOAA and the State will immediately refer the matter to appropriate NOAA and State of Florida legal offices for further coordination pursuant to this MOA. The potential for other NOAA or State actions, such as an enforcement action under section 307 of the National Marine Sanctuaries Act or under state law, may be considered coincident with the incident screening process under this section. The potential outcomes of this screening process are illustrated in Appendix A to this MOA; the coordination protocols applicable to those outcomes are as described herein.

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Joint NOAA/State Case Team - The Co-Trustees agree that in instances in which both NOAA and the State of Florida have civil claims based on threats or injuries to Sanctuary resources, the federal and state claims should be managed and coordinated as a joint claim and, wherever possible, joined in a single civil action. Accordingly, upon referral of such claims, the attorneys whom NOAA and the State of Florida assign to the referral will coordinate the formation of a NOAA/State case team. The NOAA/State case team will include such NOAA and State personnel as are appropriate, given the nature of the injuries to Sanctuary resources and the restoration planning and other assessment actions that may be required, to further review, manage, develop and coordinate on civil claims in accordance with this MOA. The NOAA and the State of Florida attorneys assigned to the referral shall serve as ad hoc coordinators for the case team until that role is reassigned by the case team. A Florida attorney assigned to the referral shall serve as lead for coordination of case team activities where claims are based on injury to Sanctuary resources within State jurisdiction.

Coordination of Joint Civil Claims - Actions and decisions on joint civil claims should be managed and coordinated expeditiously and by consensus of the NOAA/State case team. Coordination should address but is not limited to matters such as:

1. The conduct of investigations, the collection or handling of evidence, and the timely exchange of information bearing on such civil claims;
2. Determining whether joint civil claims exist and whether Sanctuary resource injuries underlying such claims warrant assessment actions and restoration planning to support such claims;
3. Determining the need for, nature and manner of implementation of emergency restoration actions that may be required;
4. Determining the appropriate administrative or judicial forum and/or procedures for presentation of joint civil claims;
5. Determining the strategies, methods or plans to be used to assess the compensation due for Sanctuary resource injuries, including the identification and selection of appropriate restoration actions to address or compensate for resource injuries;
6. Reaching consensus on restoration options and preferred restoration strategies necessary to support restoration-based assessments as early as possible in the assessment process;
7. Addressing scientific or other issues associated with injury assessment, restoration or compensation strategies or actions, including but not limited to such issues as may arise in litigation;
8. Communications and negotiations with potentially liable parties;
9. Providing for the confidentiality of information for exchange between or as necessary to protect the interests of the Co-Trustees, consistent with applicable State and Federal laws;
10. Identifying and arranging for the professional or expert services, technical or otherwise, which may be necessary or appropriate to support injury assessment, restoration, and compensation planning or actions in a timely manner;
11. Providing for the coordination among consultants, experts and other professionals as necessary or appropriate to the coordination of any assessment or litigation activity related to joint civil claims;
12. Providing for efficient discovery processes;

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13. Deciding on actions by or use of funds from potentially liable parties in advance of a final settlement, where such actions or funds may be applied to support or implement injury assessment, restoration or other activities as whole or partial compensation of civil claims within the scope of this MOA;
14. Encouraging understanding of all strategies and decisions related to such civil claims and promoting timely resolution of such issues by and between NOAA and the State of Florida;
15. Identifying appropriate terms and coordination required to negotiate and settle such civil claims;
16. Coordinating appropriate communications with the media and the public;
17. Providing for monitoring of recovery and restoration actions; and
18. Providing for the development and maintenance of an administrative record, as appropriate to the case.

Case-Specific Agreements - In implementing this MOA, additional case-specific agreements may be used to identify further procedures or terms which may facilitate cooperation and coordination of the NOAA/State case team with respect to specific civil claims.

Joint Litigation - Decisions of Co-Trustee representatives on matters in joint litigation, including settlement, shall be based on consensus and be focused on meeting the mutual objectives of the Co-Trustees stated herein.

Responsibility for Costs - NOAA and the State will each be individually responsible for the costs of their own participation in response and assessment planning and actions. The responsibility for any additional or extraordinary costs, such as costs associated with hiring contractors or experts, will be negotiated and determined in advance by the case team.

Incident Liaison for Other Incidents - For any incident or occurrence which is determined not to involve joint civil claims, an Incident Liaison may be designated to the NOAA or State case team, whichever the case may be, to serve as the case team's point-of-contact with the other Trustee. The NOAA or State case team will provide the Incident Liaison with timely and periodic reports on the status of case actions, consult with the Incident Liaison on technical, legal or policy issues as may arise, and allow the Incident Liaison an opportunity to comment on any proposed restoration plan or settlement before such plan or settlement is finalized. The Incident Liaison will be responsible for coordinating and providing such informed technical or policy advice and counsel to the NOAA or State case team, as may be appropriate to the case. The Incident Liaison will be responsible for taking such actions within its own agency as are required to provide a timely response to the NOAA or State case team on any actions, issues or plans which are the subject of joint interest or shared consideration. Together with the Incident Liaison, the NOAA or State case team may identify additional procedures to facilitate coordination and communication as are appropriate to the circumstances of the case.

Coordination Policy - The Co-Trustees agree not to act to the prejudice of one another and to protect the confidentiality of information for exchange between or as necessary to protect the interests of the Co-Trustees, consistent with applicable State and Federal laws.

VII. Use of Recovered Sums

In accordance with Section 312(d) of the National Marine Sanctuaries Act, NOAA will receive and distribute all sums recovered in satisfaction of civil claims under section 312 of the Act based on injuries to Sanctuary resources. To the maximum extent not inconsistent with Section 312(d) of the National Marine Sanctuaries Act, any monetary recovery that may result from any civil claim will be used for the exclusive benefit of the Sanctuary. Further, sums recovered under the Act with respect to Sanctuary resources lying within the jurisdiction of Florida shall be used,

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pursuant to section 312(d)(3) of the Act, in accordance with an agreement entered into by designated representatives of the Co-Trustees. Such agreements shall be documented prior to the receipt of any funds in a form and manner appropriate to the case, such as in the terms of settlement agreements, restoration plans, case-specific MOA's, case-specific spending plans or combinations thereof. Such agreements on the use of recovered sums shall be consistent with such provisions and plans for the restoration, replacement or acquisition of Sanctuary resources which were used to determine the civil claims due for the injuries to Sanctuary resources or were otherwise included in any assessment of damages with respect to joint civil claims. The following guidelines are applicable to the development of such agreements:

1. The primary use of sums recovered for injury to Sanctuary resources should be to provide for actions necessary or appropriate to restore the injured resource(s).
2. Whenever sums recovered are insufficient to fully implement the restoration plan for injured Sanctuary resources as well as provide for full reimbursement of all response and assessment costs incurred by NOAA and the State, amounts available to reimburse such costs should be reduced as necessary to ensure or maximize funding available for planned restoration actions. Any such reduction should be based on documented costs and proportionate for each Co-Trustee.
3. Funds not expended on the restoration of injured Sanctuary resource(s) or to reimburse response and assessment costs are to be used to manage and improve the Sanctuary. Such use includes but is not limited to restoring injured Sanctuary resources where such injuries are not actionable or damages for same are otherwise not recoverable.
4. Further, if the injured Sanctuary resource(s) was located in an Existing Management Area (EMA), funds not expended on the restoration of the injured resources within the EMA or to reimburse costs, will be used to manage and improve the EMA, unless NOAA and the State agree that such funds would be better applied to manage and improve other areas of the Sanctuary. Use within the EMA includes but is not limited to restoring injured Sanctuary resources where such injuries are not actionable or damages for same are otherwise not recoverable.

In addition, such agreements may:

1. Identify any special procedures needed to coordinate the implementation of restoration plans, including procedures to review and approve work plans or to address any unanticipated expenditures required to implement the restoration plan;
2. Provide for periodic reporting on expenditures to implement agreed restoration actions sufficient to allow NOAA and the State of Florida to track such actions and the use of recovered sums;
3. Specify procedures appropriate to expedite the receipt or reimbursement of costs incurred by NOAA or the State of Florida.
4. Specify procedures to comply with any State or Federal laws applicable to the post-recovery actions, including but not limited to compliance with NEPA, permitting laws and regulations, or other laws pertaining to restoration plan implementation; and
5. Include such other provision which is considered necessary or appropriate to facilitate post-recovery actions.

VIII. Dispute Resolution

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The Co-Trustees recognize that disputes may arise in the implementation of this MOA, however, it is anticipated that such disputes will, in almost every instance, be capable of resolution at the NOAA/State case team level. Consequently, disputes which arise should first be addressed by the NOAA/State case team members. In the event that a disagreement arises which cannot be resolved by consensus among the NOAA/State case team within 30 days, the matter in dispute will be elevated for resolution, as necessary, to successively higher decision levels within NOAA and the relevant State agencies. In elevating a disputed matter, the NOAA/State case team members will identify for each other the particular succession of decision levels within NOAA and the State that are applicable to elevating the matter at issue and will also expeditiously provide such information as is necessary to explain the matter in dispute, the views of both NOAA and State on the issue, efforts to resolve it at the case team level, and the timeframe within which the dispute must be resolved to meet case objectives. In seeking to resolve any disputes under this MOA, deliberations within NOAA and the State should focus on achieving the mutual objectives of the Co-Trustees as stated in Section IV.

IX. Co-Trusteeship

In all matters within the scope of this MOA, the Co-Trustees and their representatives shall act with due regard for the concurrent Trusteeship of NOAA and the State of Florida with respect to Sanctuary resources which are subject to State jurisdiction and for their shared interest in the protection, restoration and management of all Sanctuary resources.

X. Reservation of Rights

The Co-Trustees each retain full authority and reserve all rights to take whatever actions are deemed necessary to pursue, preserve or protect any legal right, interest or remedy available with respect to any civil claim. Nothing contained in this MOA is intended nor shall be construed to waive or foreclose any such authority, right, interest or remedy.

XI. Third Party Rights

This MOA encompasses agreements of the Co-Trustees and is intended to guide relevant State of Florida and NOAA personnel in implementing their assigned responsibilities. Nothing in this MOA is intended or shall be construed to create or affect any legal rights or obligations between either Co-Trustee and any third persons. This MOA does not provide the basis of any third party challenges or appeals.

XII. Other Provisions

Nothing herein is intended to conflict with current NOAA or State of Florida directives. If the terms of this MOA are inconsistent with existing directives of either of the parties entering into this MOA, then those portions of this MOA which are determined to be inconsistent shall be invalid; but the remaining terms and conditions not affected by the inconsistency shall remain in full force and effect. At the first opportunity for review of this MOA, all necessary changes will be accomplished by either an amendment to this MOA or by entering into a new agreement, whichever is deemed expedient to the interest of both parties.

“All requirements of this agreement are subject to the availability of funds of the parties.”

XIII. Modification

This MOA may be modified by agreement of the Co-Trustees. All modifications must be in writing and executed by the Co-Trustees in the same manner as this agreement.

XIV. Period

APPENDIX J: DRAFT OF THE SEAGRASS MINI 312 REGIONAL RESTORATION PLAN

FKNMS REGIONAL COMPENSATORY RESTORATION PLAN FOR SEAGRASS

The purpose of this regional restoration plan is to describe the methodology behind identifying, prioritizing, and restoring “orphaned” seagrass injury sites (sites for which there was no identified or viable responsible party) in the Florida Keys National Marine Sanctuary. Funds for the restoration of these selected sites will originate from compensatory damages recovered by the Mini 312 Program.

APP J.1 INTRODUCTION

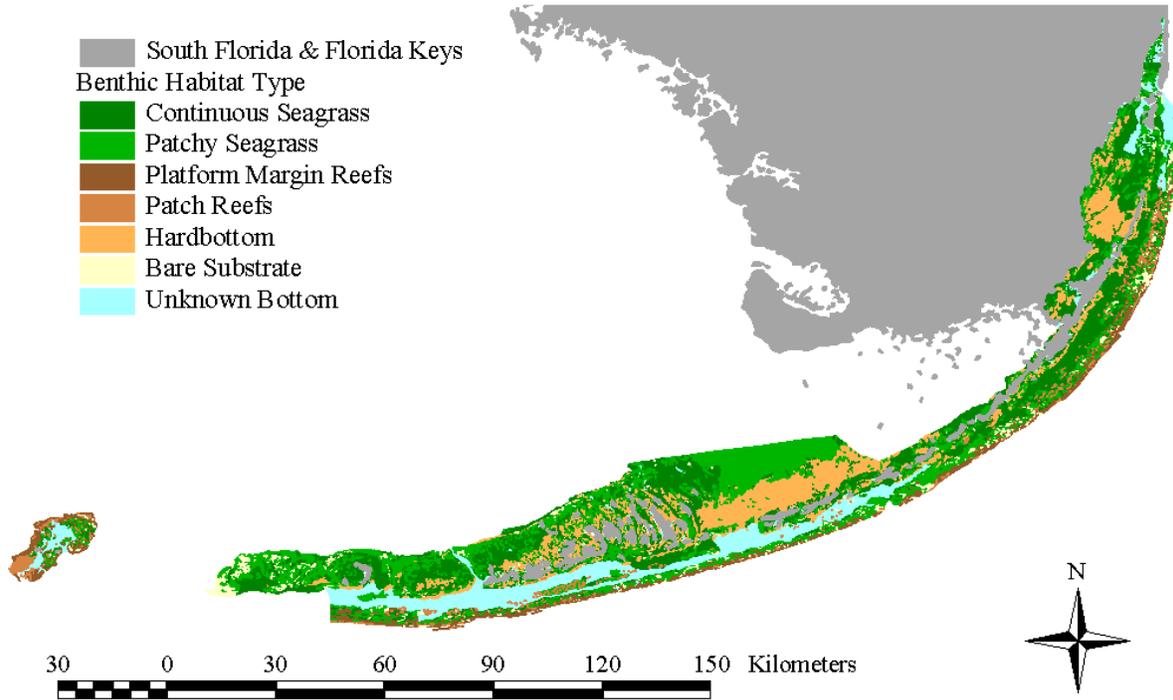
App J.1.a Importance of Seagrass Beds in the Florida Keys National Marine Sanctuary

The Florida Keys National Marine Sanctuary (FKNMS) contains some of the most extensive seagrass beds in the continental United States (see Figure App J-1). Seagrass banks are located on both the Atlantic Ocean and Gulf of Mexico sides of the FKNMS, encompassing approximately 1,860 square kilometers. They are an important component of the Florida coral reef tract, the third largest barrier reef system in the world. The predominant species of seagrasses are *Thalassia testudinum*, *Syringodium filiforme*, and *Halodule wrightii* (FKNMS 1996).

From an ecological perspective, seagrass beds are highly productive ecosystems that provide food, protection and nesting sites for many species of fishes, reptiles, birds, and mammals. Seventy to ninety percent of the harvested species in the Gulf depend on seagrass beds during at least part of their life cycle (NOAA 1996c). In turn, the viability of the recreational and commercial fishing industries, and their associated service industries, are, to some degree, directly or indirectly dependent on healthy seagrass communities.

From a geological perspective, seagrass beds are effective storm surge buffers for the low-lying Keys, thereby reducing property damage during extreme weather events. Seagrasses also function as natural filters that reduce the level of sediment in the water (i.e. turbidity). The natural filtration of the water by seagrasses is a major contributor to the clarity of the water. This process also protects other members of the living marine resources community, such as the coral reef, which is vulnerable to sedimentation and turbidity (FKNMS 1996).

Figure App J-1: Benthic Map of the Florida Keys



Source: FMRI

App J.1.b Seagrass Injuries

Seagrass injuries as a result of vessel groundings are not uncommon throughout shallow water areas in the FKNMS. The cumulative impact of these groundings has led to a pervasive scarring of seagrass beds throughout the sanctuary (Sargent et. al 1995). In 2001, 677 boat groundings were reported in the FKNMS, with approximately 60-70% of these occurring on seagrass beds (Currell 1/2002). Over 15,000 acres of moderately to severely scarred seagrass beds exist in the FKNMS (Sargent 1995).

Seagrass injuries in the FKNMS typically include a combination of propeller scars, blowholes, and sediment berms. Propeller scars are formed by the dredging effect of the turning propeller(s) as the boat travels over a shallow bank. The width of a propeller scar varies depending on many factors, including the size of the vessel, diameter and/or size of the propeller, and the extent to which the propeller is forced into the seagrass bed. Blowholes, another vessel grounding feature, are formed from the concentrated force of propeller wash, either from the grounded vessel attempting to power off the bank or the propeller wash of the salvage vessel pulling the grounded vessel off the bank. The depth and area of the blowholes vary depending on many factors, including size of the vessel, extent of power used to remove the vessel, and type of substrate sediment. Berms, the third most common seagrass injury

feature, are produced from the sand, coral fragments, and other substrates that typically are deposited around the perimeter of blowholes, thereby burying healthy seagrass.

App J.1.c Importance of Restoration

When the underground seagrass rhizome system is damaged and the surrounding sediment altered by structural injuries such as vessel groundings, the seagrass community often has a difficult time reestablishing itself without supplemental restoration efforts (Kenworthy et al. 2002). Restoration represents an important step in reducing the cumulative impact of seagrass injuries from vessel groundings throughout the FKNMS. It prevents the injuries from expanding in size or increasing in severity, and creates the site conditions necessary for the injured areas to recover to pre-incident conditions. In many circumstances, without primary restoration, the injured seagrass communities are subject to re-disturbance by storms that could slow recovery and/or expand the size of the injury (Whitfield et al. 2002). Restoration seeks to return the seagrass banks to their pre-injury, or baseline, conditions so they can continue to provide the same ecological services they did before the injury.

App J.1.d The Mini 312 Program

In 2000, the “Mini 312” program was established to address the problem of vessel groundings on seagrass beds in the FKNMS.³ The program is a joint effort by the National Oceanic and Atmospheric Administration’s (NOAA) Damage Assessment Center (DAC), Marine Sanctuary Division (MSD), General Counsel (GC), Center for Coastal Fisheries and Habitat Research; and the State of Florida (FL-DEP). The objective of the Mini 312 program is to quickly and cost-effectively prepare litigation quality claims for small to moderate-sized seagrass grounding injuries and attempt to recover damages from the parties responsible for the injuries.⁴ Under the National Marine Sanctuary Act (NMSA) and state law (Art. X, s. 11, Fla. Const.; 253.001, Fla. Stat.), NOAA and the State of Florida serve as co-Trustees in recovering seagrass damages and implementing restoration projects.

Individual injury claims are based on natural resource damage assessments (NRDAs), which determine the nature, extent and severity of each injury, anticipated recovery time, compensatory restoration requirements, and anticipated costs associated with the response, assessment and restoration process. NRDA claims hold the responsible party liable for the cost of response, assessment, and primary and compensatory restoration, monitoring and oversight. “Primary restoration” refers to restoration at the actual grounding site as necessary to restore seagrass communities to their baseline conditions. “Baseline” refers to the level of services that would have been provided by the injured resource but for the incident. Baseline conditions are measured via standard field assessment techniques in the seagrass immediately adjacent to the injured areas (reference areas). “Compensatory restoration” is undertaken to compensate the public for ecological services lost during the time it takes the seagrass injury to recover to baseline conditions. The basis for determining the appropriate scale of compensatory seagrass restoration, which occurs offsite from the initial injury, is derived from biological and economic models that estimate the amount of seagrass services lost and time to full recovery (Fonseca et al. 2000).

³ The program is so named because most of the cases addressed are smaller in size than the vessel grounding damage assessments historically undertaken by NOAA (i.e., “mini”) and are addressed under Section 312 (the natural resource damage assessment provisions) of the National Marine Sanctuaries Act.

⁴ The National Marine Sanctuary Act (NMSA), 16 U.S.C. §1443(d)(2) (A), (B), and (C), defines the appropriate uses of recovered damages in order of priority as “(A) to restore, replace, or acquire the equivalent of the sanctuary resources that were the subject of the action...; (B) to restore degraded sanctuary resources of the national marine sanctuary that was the subject of action, giving priority to sanctuary resources and habitats that are comparable to the sanctuary resources that were the subject of the action; and (C) to restore degraded sanctuary resources of other national marine sanctuaries.”

App J.1.e FKNMS Regional Restoration

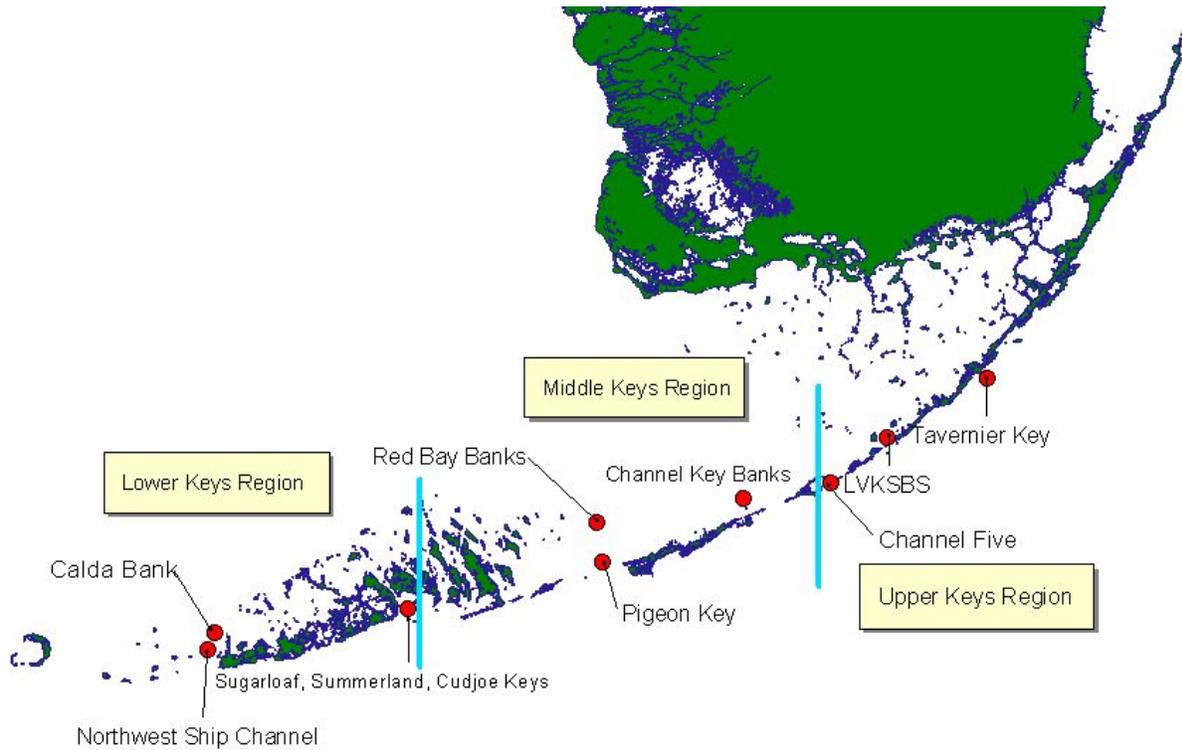
Compensatory funds collected from small seagrass NRDA cases will be pooled together to take advantage of economies of scale, allowing for cost-effective implementation of larger seagrass restoration projects throughout the FKNMS. The reasons for selecting the specific sites and the planned actions to restore the sites are detailed in this document.

APP J.2 SELECTION OF PRIORITY SITES

App J.2.a FKNMS Geography and Compensatory Funds

The FKNMS is divided into Upper, Middle and Lower regions. The Upper Keys range from Key Largo through Channel Five Bridge; the Middle Keys from the Channel Five Bridge to Niles Channel; and the Lower Keys from Niles Channel south and west through the remainder of the sanctuary to the Dry Tortugas (see Figure App J-2).

Figure App J-2. Frequently injured seagrass areas within the Florida Keys National Marine Sanctuary



The Mini 312 program pursues claims for groundings occurring in all three regions of the FKNMS. The compensatory funds obtained from settled cases in each specific region will usually be put toward compensatory

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restoration *in that specific region*.⁵ However, in circumstances in which resource managers feel it is appropriate, injury sites located outside the region from which compensatory funds derive may be selected. Because compensatory funds should accrue through the Mini 312 program, restoration of sites should be ongoing as funds accumulate.

For logistical reasons, as well as to create a visible restoration project in each region, the initial intent is to select *only one area* within each of the three regions in the FKNMS for compensatory restoration implementation. The area selected will be one in which the frequency of groundings is high and various factors indicate that restoration will be successful (see App J.2.b and App J.2.c). However, the Trustees have the discretion to go outside of these areas as long as a strong nexus with the injured resources and services is maintained. The prioritization of areas for compensatory restoration within each region, as well as specific injury sites for restoration, is discussed below.

App J.2.b Statistical Analysis of Grounding Frequency Data by Region

While injuries to seagrass beds are widespread, they are not uniform in distribution. Some geographical areas are more heavily impacted than others. To prioritize potential locations for restoration using compensatory funds, the frequency of grounding events by area is an important initial consideration. NOAA and the State of Florida (FL-DEP) believe that groundings in the most frequently injured areas will decline by working to change human behavior through public outreach, education, and potential changes to navigational aids associated with a regional restoration project site.

Thus, available seagrass grounding data was used to mathematically determine areas in each FKNMS region that receive disproportionate injuries from vessels.⁶ Each grounding incident within each region was assigned to an area using GPS coordinates or detailed geographic description. An area is defined as a small subsection of a region, usually consisting of a few square kilometers, (e.g. Red Bay Banks, Tavernier Key Bank, Middle Grounds, etc.).⁷ Once all grounding incidents were assigned areas, the number of groundings in each area was then divided by the total number of groundings within the FKNMS. This produced a percentage of groundings for each area within each region.

$$P_i = [(G_i / T_g) * 100]$$

where P_i = percentage of groundings in area i
 G_i = number of groundings within area i
 T_g = total grounding events in FKNMS

As detailed in Tables App J-1 through App J-3, certain areas in each region account for the largest percentage of seagrass injuries. The location of the most frequently injured areas is shown in Figure App J-2.

⁵ Funds recovered for injuries to resources within state parks will be put towards compensatory restoration in that same park.

⁶ Data used in this analysis reflects FKNMS records as of October 10, 2001.

⁷ Each of these areas are clearly marked on NOAA navigational charts.

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Table App J-1: Upper Keys Most Frequently Injured Areas

Area	Percent of Total FKNMS Groundings
Lignumvitae (LVKSBS)	11%
Tavernier Key	6.5%
Channel Five (Oceanside/Jewfish Hole Bank)	6.0%
Whale Harbor	3.5%
Snake Creek	3.5%
Cotton Key	3.0%
Tarpon Basin	1.5%
Port Largo Canal	1.0%
Broad Creek	0.5%
Indian Waterway	0.5%
Upper Keys Total	37%

Table App J-2: Middle Keys Most Frequently Injured Areas

Area	Percent of Total FKNMS Groundings
Red Bay Bank	6.0%
Pigeon Key	4.0%
Bethel Bank	3.0%
Looe Key	3.0%
Channel Key Pass/Banks	2.5%
Stirrup Key	1.5%
Yacht Channel	1.5%
Money Key	1.5%
Sprigger Bank	1.0%
Rachel Banks	1.0%
Middle Keys Total	25%

Table App J-3: Lower Keys Most Frequently Injured Areas

Area	Percent of Total FKNMS Groundings
NW Ship Channel	5.0%
Cudjoe/Summerland/Sugarloaf Key	3.5%
Calda Bank	3.0%
Boca Grande	3.0%
Lakes Entrance	2.0%
Boca Chica Channel	2.0%
Key West Harbor	1.5%
Marquesa Keys	1.5%
Middle Grounds	0.5%
Channel Key	0.5%
Lower Keys Total	23%

App J.2.c Further Evaluation of Priority Areas for Regional Restoration Action

After determining the distribution of injuries, a multi-category evaluation system was developed to prioritize regional restoration areas in the Upper, Middle, and Lower Keys. As a starting point, NOAA and the State of Florida proposed that the top three statistically most injured areas in each region be considered for restoration with compensatory damages. In addition to the statistical frequency of injury in the areas, NOAA and FL-DEP took into consideration additional site-selection criteria. As indicated in Table App J-4, five additional area specific criteria were evaluated by NOAA and FL-DEP staff to further refine the selection of priority areas for restoration. All areas were ranked with a score of either one or zero. Across all of the criteria, the accumulation of points was viewed as a positive indication that the site is a high priority for restoration action. Each site criterion considered is defined below⁸:

Frequency of Injury: It is believed that the publicity surrounding the designation of an area as a regional restoration area will result in heightened public awareness of the problem of vessel groundings in the area. An area designated as a regional restoration site may be more likely to receive additional navigational aids, patrols, and signs for boaters. Additionally, the placement of birdstakes, which will be observable at many of the restoration sites (see Attachment A for a description of birdstakes), will help raise awareness of the problem. *Scoring: If an area has the highest frequency of groundings per regional zone (Upper, Middle, and Lower Keys) it receives a one, otherwise, a zero.*

Proximity to Land: All other factors being equal, if an injury area is within five km of shore, restoration field logistics and monitoring will be facilitated due to the site's accessibility (especially important during inclement weather). *Scoring: If an area is within 5 km of shore it receives a one, otherwise, a zero.*

No Motor Zone: All other factors being equal, areas that are designated no-motor zones have a lower risk of re-injury from new boat groundings once a restoration project is implemented. Because the Mini 312 program seeks to restore areas where the likelihood of long-term success is greatest, these areas fall higher on the priority list. *Scoring: If an area is within a no-motor zone it receives a one, otherwise, zero.*

Jurisdiction: As the implementation of these regional restoration projects is a joint NOAA and FL-DEP activity, it is anticipated that the permitting and management oversight of a restoration project will be more efficient if it occurs in an area with no other overlapping jurisdictions with local, state and federal government agencies.⁹ *Scoring: If an area is within the jurisdiction of NOAA and FL-DEP with no other overlapping local, state or federal agency jurisdictions, it receives a one, otherwise, a zero.*

⁸ All of these criteria may be determined by non-field data, except for frequency of injury and current velocity.

⁹ This 'jurisdiction' criterion shall not be construed to apply to use of funds recovered for injuries to resources within state parks. Except for reimbursement of response and assessment costs, pursuant to the Agreement for Coordination of Civil Claims between NOAA and the Board of Trustees of the Internal Improvement Trust Fund of the State of Florida, funds recovered for injured Sanctuary resources within a state park that is within the FKNMS shall be used to restore, manage, and improve that state park.

Table App J-4. Criteria for Selection of Seagrass RRP Project Sites

	Frequency of Injury	Proximity to Land	No Motor Zone	Jurisdiction	Total
UPPER KEYS					
Tavernier Key	0	1	1	1	3
LVKSBS	1	1	1	0	3
Channel Five	0	1	0	1	2
MIDDLE KEYS					
Pigeon Key	0	1	0	1	2
Bethel Bank	0	1	0	1	2
Red Bay Bank	1	0	0	1	2
LOWER KEYS					
Cudjoe Key	0	1	0	1	2
Calda Bank	0	0	0	1	1
NW Ship Channel	1	0	0	1	2

Based on the above analysis of the most frequently injured areas in the Upper, Middle, and Lower Keys and the selection criteria scores in Table App B-4, NOAA and FL-DEP propose the following three locations as priority areas for regional restoration projects (those with the highest score were selected). Among “equivalent” orphan sites, those that were most cost-effective to restore were chosen.

Upper Keys: Tavernier Key and LVKSBS

Middle Keys: Pigeon Key

Lower Keys: Cudjoe Key

APP J.3 ASSESSMENT

Data on orphan injury sites (sites for which there was no identified or viable responsible party) in the three areas selected in App J.2.c were compiled using aerial photos and on-site visits. Trustees examined the sites and chose those that best fit the area selection criteria listed in App J.2.c. Among “equivalent” orphan sites, those that were most cost-effective to restore were chosen. However, in the future, the Trustees reserve the right to deviate from the priority list of sites as long as a strong nexus with the injured resources and services is maintained. Prescribing a rigid hierarchy of sites will not facilitate achieving the goal of timely, cost-effective restoration. Once the sites were selected, State and Federal Trustees conducted an on-scene assessment of each one to document the size and severity of the injury. The assessment for each selected site can be found in Attachment B. Additional sites from the priority list will be selected and assessed in the future as compensatory funds accumulate.

APP J.4 RESTORATION

App J.4.a Restoration Alternatives

Once sites were selected, state and federal Trustees developed a restoration plan specific to each site, given site characteristics and conditions. A more detailed explanation of restoration alternatives and associated restoration impacts can be found in Attachment A. The total cost of restoration was also calculated for each selected site. The assessment/restoration plan for each site can be found in Attachment B.

App J.4.b Monitoring

Monitoring of the compensatory restoration projects is necessary to determine whether they are providing services in a manner consistent with restoration goals and to assess the potential need for mid-course corrections to ensure

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that the projects meet designated restoration performance standards. The design of the monitoring program permits the detection of, and response to, significant changes in seagrass recovery rates or damage to restoration components (bird stakes, seagrass transplants, sediment fill, etc.) as a result of external events, such as major storms or vandalism. Seven monitoring events will be completed at each site over a five-year period. A detailed discussion of the steps involved in each monitoring event can be found in Attachment C.

APP J.5 REFERENCES

App J.5.a Seagrass Managers and Specialists Contacted

Richard Butgereit, Aug. 20, 2002.

John Dotten, Environmental Specialist II, Florida Keys National Marine Sanctuary, July 26, 2001; Aug. 21, 2002.

Michael R. Johnson, Fishery Biologist, National Marine Fisheries Service, July 17, 2001; Aug. 19, 2002.

Rich Jones, Marine Resources Planner, Monroe County Marine Resources, July 25, 2001.

Jud Kenworthy, Seagrass Biologist, National Oceanic and Atmospheric Administration (NOAA), various dates.

Kevin Kirsch, Seagrass Biologist, National Oceanic and Atmospheric Administration (NOAA), various dates.

Curtis Kruer, Aug. 1, 2002.

Lauri MacLaughlin, Sanctuary Resources Specialist, FKNMS, July 2001 (and other dates).

Anne McCarthy, Environmental Specialist III, FDEP/FKNMS, July 27, 2001 (and other dates).

Patricia McNeese, Environmental Consultant, June 24, 2002 (and other dates).

Sean Meehan, Seagrass Biologist, National Oceanic and Atmospheric Administration (NOAA), various dates.

Jerald Morrison, Environmental Consultant, Aug. 21, 2002

Bill Sargent, FMRI Research Scientist, Aug. 21, 2002.

Officer Joe Scarpa, Law Enforcement Officer, Florida Fish and Wildlife Commission, August 2001.

Officer Greg Stanley, Law Enforcement Officer, Florida Fish and Wildlife Commission, September 2001.

Pat Wells, Park Manager II, Lignumvitae Key State Botanical Site/ Monroe County Port Commission Chairman, October 17, 2001; June 21, 2002.

App J.5.b Literature Cited

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- Sargent, F.J., Leary, T.J., Crewz, D.W., and Kruer, C.R. 1995. *Scarring of Florida's seagrasses: Assessment and Management Options*. Florida Marine Research Institute Technical Report TR-1.
- Whitfield P.W., Kenworthy W.J., Hammerstrom K.K., and Fonseca M.S. (2002). *The role of a hurricane in the expansion of disturbances initiated by motor vessels on seagrass banks*. Journal of Coastal Research: 37:86-99.

ATTACHMENT A TO APPENDIX J: RESTORATION ALTERNATIVES

A combination of one or more of the alternatives presented in Table A is identified as the preferred alternative(s) for restoration for each of the sites selected for regional restoration. The identification of the proposed preferred alternative is conducted by Trustees with expertise in seagrass restoration ecology and first hand experience with the grounding site. Typically, seagrass transplants will be accompanied with bird stakes if the water depth is less than 1.5 meters or fertilizer spikes if water depth is greater than 1.5 meters. In addition, if the site-specific conditions warrant sediment fill for blowholes or sediment tubes for wide propeller scars, seagrass transplants and bird stakes will be inserted after sediment placement activities. Table A summarizes the alternatives available, the conditions under which they are chosen, and the ultimate results of their applications.

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Table A: Seagrass Restoration Alternative Matrix/Comparison

ALTERNATIVE	SITE CONDITION	RESULT
Seagrass Transplants: Planting seagrass (<i>S. filiforme</i> and <i>H. wrightii</i>) taken from donor sites into injured areas including berms, blowholes and/or prop scars.	Often selected at low to moderate energy sites or where the probability of transplant loss due to high water velocity is lowest.	<ul style="list-style-type: none"> Stabilization of sediments decreases injury recovery time. Planting faster growing opportunistic species like <i>H. wrightii</i> or <i>S. filiforme</i> serves as a temporary substitute for the climax species, <i>T. testudinum</i>.
Bird Stakes: Insertion of stakes upon which birds roost, dropping their feces on and thus fertilizing seagrass beds. Inserted into berms, blowholes and/or prop scars.	Used on seagrass beds in water depths of 1.5 meters or less (mean high water).	<ul style="list-style-type: none"> Bird feces reach the seagrass floor for as long as the stakes are in place. Colonization of seagrasses into disturbed sediments is facilitated and/or seagrass transplants grow at a faster rate than natural recovery.
Fertilizer Spikes: Insertion of chemical fertilizer spikes that release fertilizer into the sediments of replanted seagrass beds over a period of 3-4 months. Inserted into berms, blowholes and/or prop scars.	Used on replanted seagrass beds when water depths are greater than 1.5 meters or when bird stakes are inappropriate due to hazards to navigation or risk of vandalism.	<ul style="list-style-type: none"> Fertilizer is released at a constant rate over an area of approximately one square meter around the spike. Colonization of seagrasses into disturbed sediments is facilitated and/or seagrass transplants grow at a faster rate. A concentrated dose of nutrients is delivered in a small area that directly benefits individual planting units
Sediment Fill: Filling of blowholes or wide propeller scars with sediment similar to that of the surrounding area.	Used in blowholes greater than 20 cm. deep.	<ul style="list-style-type: none"> The seafloor is rapidly returned to its original grade. The substrate is stabilized quickly after an incident to prevent further deterioration from erosion and to prepare the area for colonization by neighboring or transplanted seagrasses.
Sediment Tubes: Placement of biodegradable sediment-filled fabric mesh tubes inside the trench of a prop scar or blowhole.	Often used in narrow excavations (such as prop scars) deeper than 20 cm.	<ul style="list-style-type: none"> Erosion rates in scars are reduced. Conditions are made more suitable for natural recolonization of the injured area by neighboring seagrasses and growth of transplants are fostered.
Berm Redistribution: Returning displaced fill back into the injury	Undertaken when it is believed that doing so will not cause more harm by damaging live seagrass below the berm.	<ul style="list-style-type: none"> Stabilization of the injury site and recovery of the area previously covered by sediment is enhanced.
Exclusion Cages: Enclosing seagrass transplants with a cage to prevent it from being overgrazed.	Used in restoration sites located near coral reef.	<ul style="list-style-type: none"> Allows seagrass beds to reestablish themselves to the point where they are not overgrazed when the cages are removed.

ATTACHMENT B TO APPENDIX J: SELECTED ORPHAN SITE FOR COMPENSATORY RESTORATION

NAME OF INJURY SITE: *EXAMPLE*
REGION: MIDDLE KEYS

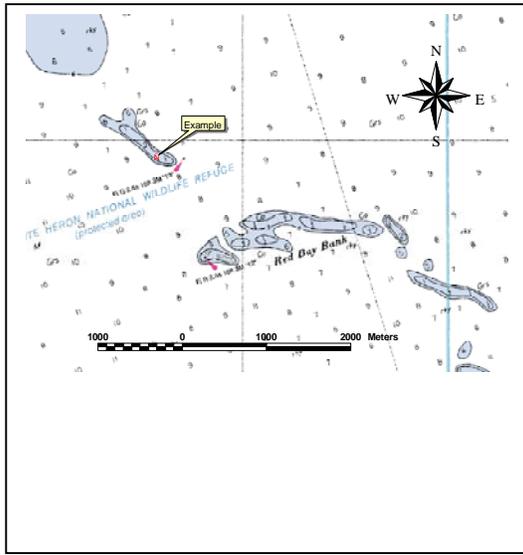


Figure 1: *Example* Injury Site

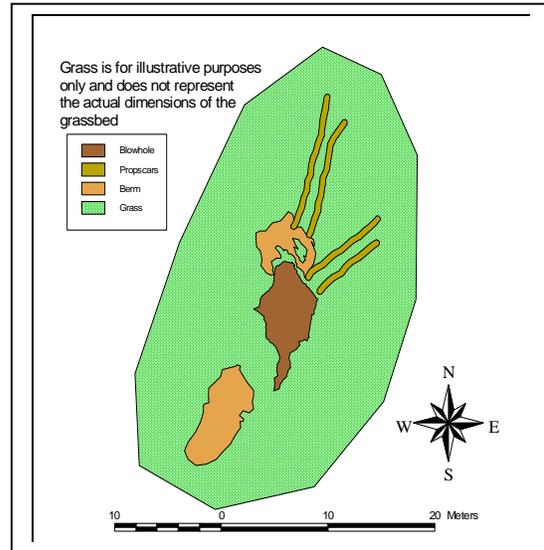


Figure 2: Physical Dimensions of Injury

I. INJURY DESCRIPTION

LOCATION OF INJURY: Bayside Moser Channel near marker 13 (Marathon, FL)

LAT/LONG POSITION: N 024° 45.8941' W 081° 10.5936' (blowhole)
N 024° 45.9038' W 081° 10.5908' (North-South propscars)
N 024° 45.8982' W 081° 10.5885' (Northeast-Southwest propscars)

SUBSTRATE TYPE: Primarily *Halimeda* spp. hash, coral rubble, and carbonate sands and muds

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Table 1: Site Characteristics

Site Characteristic	Disturbance Level (1-5, 5 is Highest)	Comments
Orientation (relative to main flow axis)		
Flow Magnitude/Current Speed		
Wave Exposure		
Sediment Particle Size		
Drift Algae or Litter Accumulation in Injury Site		
Instantaneous or Historical Characterization (1 or 0)		

Table 2: Injury Dimensions

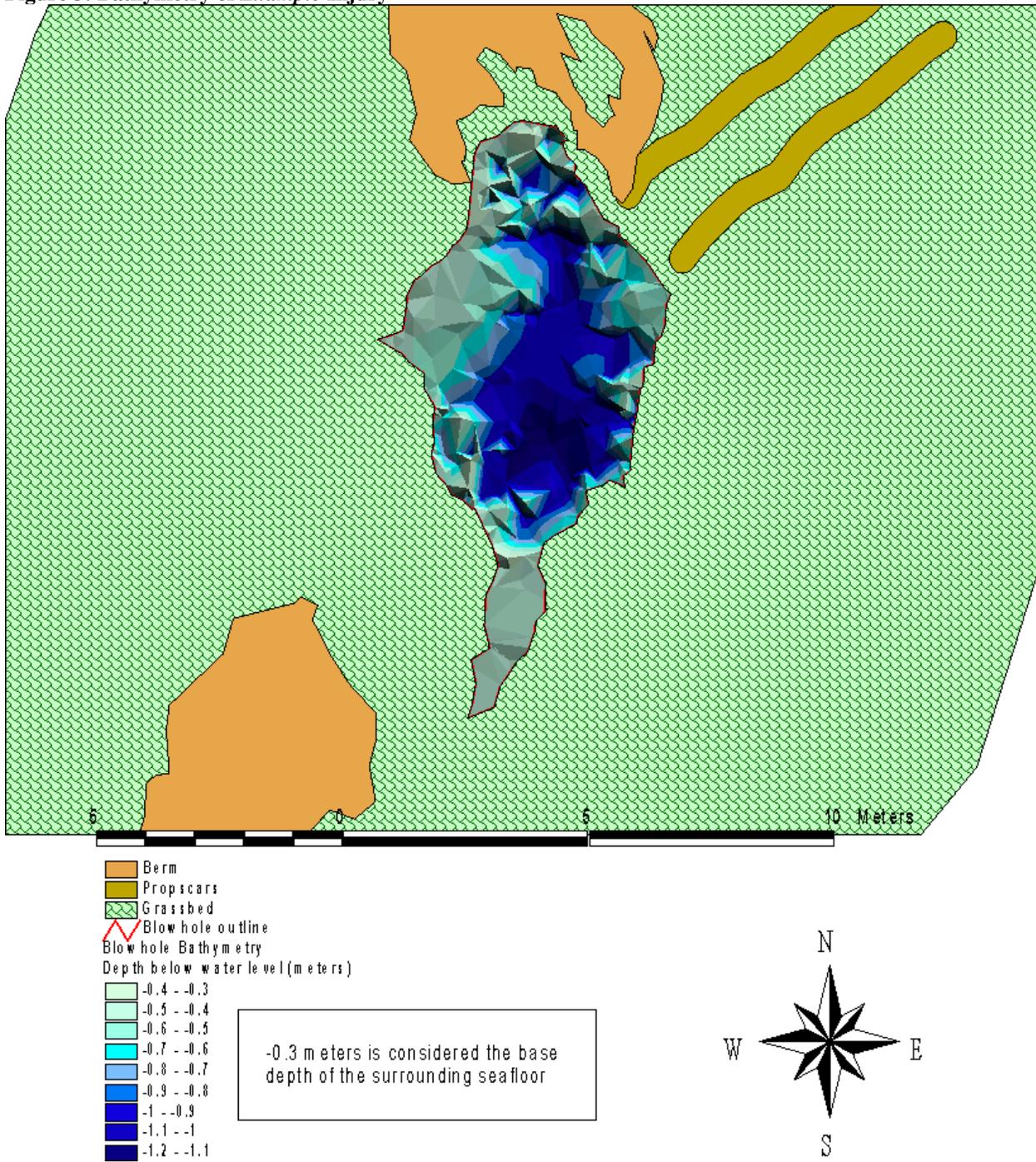
	AREA (m ²)	LENGTH (m)	WIDTH (m)	DIRECTIO N	DEPTH (m)	VOLUME (m ³)
Blowhole 1	30.7	NA*	NA	NA	.9	13.27
Propscar 1	6.17	11.64	.53	North-South	NA	Na
Propscar 2	5.5	10.38	.53	North-South	NA	NA
Propscar 3	4.58	8.32	.55	SW-NE	NA	NA
Propscar 4	3.78	6.88	.55	SW-NE	NA	NA
Berm	45.06	NA	NA	NA	NA	NA

*NA=Not Applicable

Table 3: Percent Cover

Percent Cover	Species	Inside Injury	Surrounding Habitat
	<i>T. testudinum</i>	1.00%	19.00%
	<i>H. wrightii</i>	0.00%	0%
	<i>S. filiforme</i>	0.00%	1.00%
	<i>Total</i>		20.00%

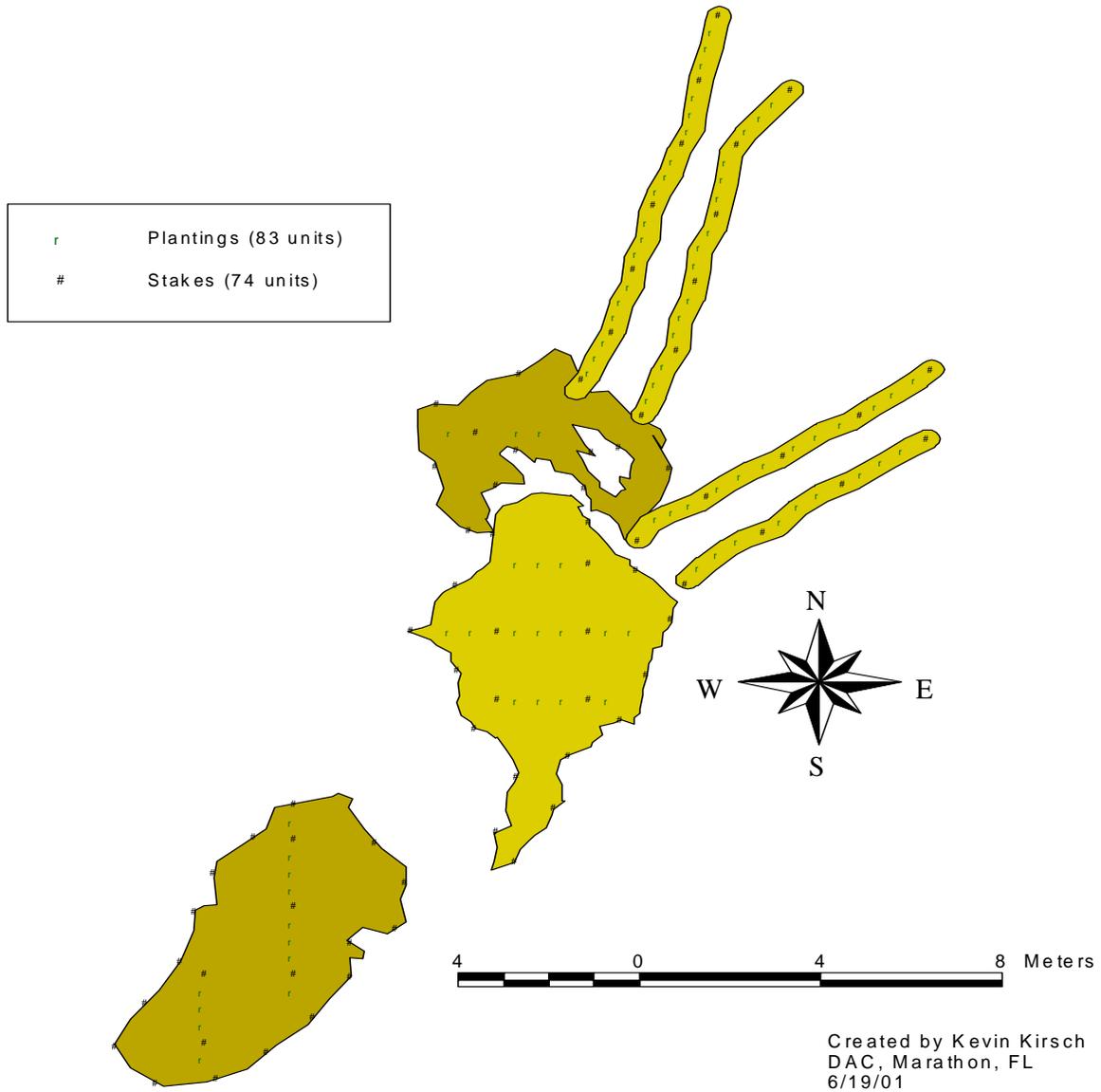
Figure 3: Bathymetry of *Example Injury*



II. PROPOSED RESTORATION ACTIONS

- a) Bird Stakes. The grounding site requires a total of 74 stakes (see Figure 4).
- b) Seagrass Transplants. The grounding site requires a total of 83 seagrass-planting units (*Halodule wrightii*) (see Figure 4).
- c) Sediment Fill. The grounding site requires a total of 13.27 cubic meters of sediment fill prior to staking and planting.

Figure 4: Staking and Planting of *Example*



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III. MONITORING SCHEDULE

		Survival Monitoring	Braun Blanquet Abundance	Video Transects
Year 1	60 days	x		x
	180 days	x	x	x
	360 days	x	x	x
Year 2	180 days		x	x
	360 days		x	x
Year 3	180 days		x	x
Year 4	180 days		x	x
Year 5	180 days		x	x
number of PUs sampled		Every PU	Scars: Every PU; Holes/Berms: Minimum of 10% of PUs	Scars: Every PU; Holes/Berms: 5 randomly selected rows (if<5 row; all)

***Note: PU=Planting Unit**

IV. ESTIMATED COST IN \$2003

Restoration Costs	\$6,036
Restoration Monitoring Costs	\$13,157
Restoration Oversight Costs	\$4,054
Subtotal NOAA Restoration Costs	\$23,247

ATTACHMENT C TO APPENDIX J: MONITORING EVENTS

A. Site Identification

The grounding injury can be re-located by future monitoring teams by referencing the documented differential global positioning system coordinates.

B. Monitoring Variables

The following monitoring parameters will be observed and/or measured at the site(s):

- initial survival of seagrass transplants;
- incidence of seagrass re-colonization from transplants and or the undisturbed side populations by percent area covered; and
- structural integrity of the bird stakes, planting units, and or sediment fill;

C. Monitoring Data Processing and Utility

Monitoring events will assess transplant and natural re-colonization via measures of planting unit (PU) survival, areal coverage, and documentation with video transects. The execution and application of the monitoring effort is adapted from “Guidelines for the Conservation and Restoration of Seagrasses in the United States and Adjacent Waters”, available at: <http://shrimp.bea.nmfs.gov/library/digital.html> - under “Appendices” - pages 207-220, or <http://www.cop.noaa.gov/pubs/das/das12.html>. Briefly, the monitoring data will be used to determine if successful establishment of planted seagrass has occurred and if it is on an appropriate recovery trajectory. If not, these data will be used to plan and execute remedial restoration. The success criteria are: 1) whether planted material has a minimum of one rhizome apical per PU, a PU survival rate 75% of the planting units having established themselves by the end of Year 1. If it is determined that less than 75% survival has occurred by the end of Year 1, then remedial planting should occur during the next available planting period to bring the percentage survival rate to the minimum standard by the next monitoring survey, and 3) the measured growth rate of bottom coverage from either direct quadrat surveys or video-based assessment (p. 220 above; Braun-Blanquet assessment). The growth rate should be considered successful if, starting after one year, the planted, pioneering species of seagrass in the scars (restoration sites) is projected with 95% statistical confidence, to achieve complete bottom coverage (with pre-injury levels of shoot density) within the five year monitoring period for original plantings. If this criterion is not met, then remedial planting should occur during the next available planting period. Videotaping is also performed to provide an unambiguous record of the status of the restoration that is particularly valuable to parties not familiar with seagrass systems and interpretation of statistical data.

D. Monitoring Schedule

The primary restoration-monitoring plan developed for this site requires a principal and assistant biologist to complete seven monitoring events over a five-year period (see Table C). During the first year, two monitoring events are scheduled at intervals of 180 and 360 days. Two monitoring events are also conducted the second year. Monitoring events will assess transplant and natural re-colonization survival, shoot density, aerial coverage, and documentation with video transects. As conditions at the restoration site are subject to change from storms or climatic events, one additional monitoring event is scheduled per year for years three through five (at 180 days) to assess restoration recovery, and if necessary, to conduct mid-course corrections (e.g., replanting of seagrass, insertion of stakes, etc.).

Each monitoring event will consist of two biologists working approximately two days per monitoring event. The number of days per monitoring event reflects travel time and the possibility of inclement weather that may necessitate multiple visits to the site. Two biologists are necessary for safety as well as for reducing the potential for errors in measurements, plantings, and observations. Following each field trip, up to one day will be required to process the observations and measurements, enter information into a database, analyze the data and prepare a report. Also included in this period is the time necessary to transcribe field notes, develop film, and identify and record all phototapes.

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Table C. Categories and Timing of Primary Monitoring

		Survival Monitoring	Braun Blanquet Abundance	Video Transects
Year 1	60 days	x		x
	180 days	x	x	x
	360 days	x	x	x
Year 2	180 days		x	x
	360 days		x	x
Year 3	180 days		x	x
Year 4	180 days		x	x
Year 5	180 days		x	x
number of PUs sampled		Every PU	Scars: Every PU; Holes/Berms: Minimum of 10% of PUs	Scars: Every PU; Holes/Berms: 5 randomly selected rows (if<5 row; all)

***Note: PU=Planting Unit**